#1 Guide To Atari Computing

START

Volume 5, Number 5 January 1991 USA $14.95 • Canada $19.95

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ANTIC THE 8-BIT RESOURCE! PAGE 84

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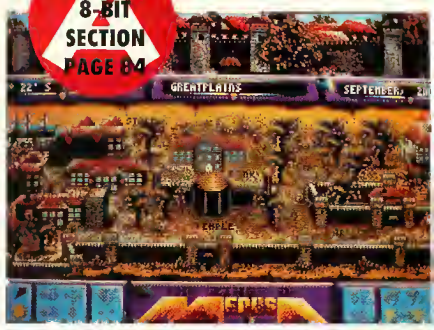

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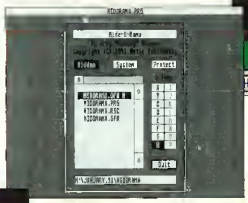
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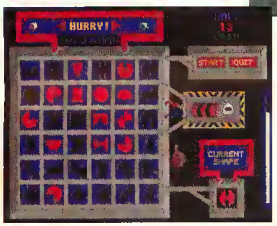

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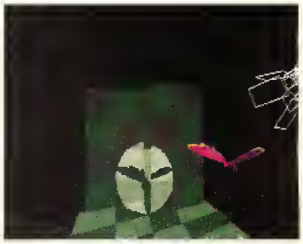
Phase-4

PHASE-4 ANIMATION SEQUENCE *by Lexicor Software Inc.*

Watch the latest in rendering software at work! The Phase-4 3D animation package, profiled on page 22, was used to create this sequence. Double-click on the DEMO folder, then go into the LEXICOR folder. This software is copyrighted by Lexicor Software Inc. START assumes no responsibility for the performance of this software.

Tiger Cub

TIGER CUB DEMO *by Dr. T's Music Software Inc.*

This MIDI sequencer was reviewed in November 1990. You'll find TIGERARC.PRG in the DEMO folder on your START disk. Follow the disk instructions to un-ARC this file, but note that it requires 537K of disk space; you will need a double-sided disk or a hard drive for the destination files. Double-click on README.DOC for information about the demo. Tiger Cub Demo is copyrighted by Dr. T's Music Software Inc. START assumes no responsibility for the performance of this software.

CROSSWORD CREATOR UPDATE *by John L. Hutchinson*

This upgrade to the ever-popular Crossword Creator, which appeared in the June 1990 issue, supports those nearly Epson-compatible printers that have a problem printing puzzles in draft mode. All files are in the folder CROSSWRD.

Crossword Creator

#1 Guide To Atari Computing

START®

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The Year In Review

Fill in the blank: "19____ Is The Year Of Atari." For the past several years, overzealous Atari-magazine editors have announced that the coming year would be the big one for Atari, the year the computer maker would really make its mark. This misplaced enthusiasm hasn't been without reason. With all the hot new hardware either planned or actually released by Atari in that time, every year did indeed seem like *the* year.

1990, as it turned out, would not be one of those years. Unavailable products slowed domestic sales, and new hardware releases suffered delay after delay. Even the Lynx, though readily available, suffered from a lack of compatible games.

But, finally, there's a glimmer of hope on the Atari horizon. The STE and the TT were released, the Lynx has plenty of game cartridges, and Portfolio sales continue to be healthy. 1991 may not be the year of Atari, but they're going to make a damn good bid for it.

The Year In START

A lot can happen in a year, and, as many of you know, plenty has happened at START. Major changes in staff and design, conversion to desktop publishing and the recent inclusion of Antic magazine mark some of the highlights. And can you believe we've published well over 100 product reviews? In a recent conversation with one of our advertisers, I decried the lack of space that START can give reviews because there are more products out there than we have editorial room for. The advertiser shot back with, "Oh, come on, hardly anything has come out this year." One need only open up the pages of this month's issue to see that's not the case.

And Speaking Of The TT

After a long wait, we finally got our hands on a TT, Atari's new computer based on the Motorola 68030 microchip. START's TT includes 2MB of RAM (expandable to 27MB), a built-in 40MB hard drive, and a clock speed of a screaming 32MHz. It also includes the new TT Desktop, which goes beyond a simple GEM enhancement.

The TT looks like a hot machine and promises to be big seller for Atari, but I'll not go into any great detail here. Watch for a full review in the February 1991 issue.

The START Disk

When you boot up this month's START disk you'll notice a significant difference from past disks — there's more to it, twice more in fact. The START disk is now double sided and packed with more great programs and utilities than ever before.

Tom Byron

TOM BYRON
START Editor

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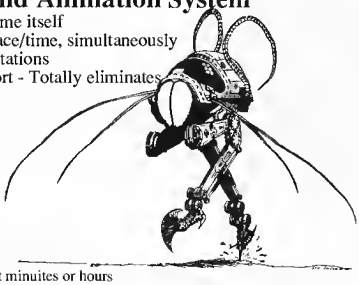

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Dump The 8-Bit

It came as a shock to me that I now have to live with, and pay for, 8-bit stuff in my favorite ST magazine, when I go out of my way to skip all references of 8-bit stuff on the BBSs I call so I won't waste my online time. Now it'll get me at home.

If the 8-bit market is so small that they cannot support their own magazine, then they deserve to be without one. The few months of advertising revenue you'll get from the three or four remaining 8-bit vendors can't be so much as to jeopardize your ST-only readers.

Dennis Conway
Los Angeles, CA

Users of the 8-bit Atari computers are probably staying with their machines for one of the following reasons: they can't afford to buy another computer, or they're perfectly happy with what they have. While there may not be many 8-bit vendors left (there are certainly more than three), there are plenty of users who are important to us. As long as the demand for 8-bit support is there, Antic Publishing, through START, will continue to provide a resource for the classic Atari computer. —START Ed.

Problems With Bombs

Recently, I began having a serious problem when using Desktop Publisher ST. When loading an existing DTP file I experience an intermittent two-bomb crash when the paragraph-styles information loads. If the file does load in OK, printing sometimes causes the program to crash. I booted with a program called ANTIBOMB, and the error messages it gave me were EXCEPTION ERROR or BUS ERROR. All my other programs run without problems. I have erased and reinstalled the program from my master disks, to no avail. I also installed the program to run from floppy disks, but the problem persists. Is there a way to determine if this is a bug in the program, or is my computer going bad?

Larry Borchelt
Goshen, IN

If the computer crashes only when you use a certain program, then the problem is not with your computer hardware. If the problem has only recently started, then it's not a bug in the program, either. Perhaps a new desk accessory or AUTO-folder program on your hard drive is interfering with Desktop Publisher. Disable these programs until you find the culprit. Also, check all of your floppy disks for a virus. If there is one on your master Desktop Publisher disks, it could be causing your problems. Finally, it's possible that the master disk itself became corrupted (cosmic radiation?), and when you made a backup to your hard drive, the offending byte was passed along. In that case, contact Timeworks to ask about a replacement. —START Ed.

Tracker/ST

Thank you for the very favorable review of Tracker/ST which appeared in your November 1990 issue. I'd like to take a moment to clarify two points made by your reviewer.

First, the current version of Tracker/ST (version 2.03) fixes the mouse clicking problem that occurred with TOS 1.4. All of Tracker/ST's buttons now work with every version of TOS, including the STE TOS and the TT TOS. In July we sent this free upgrade to every registered Tracker/ST owner.

Second, Tracker/ST's mail merge does indeed allow you to insert fields into a letter. All you have to do is place an ampersand before and after the field name. For example, typing in &CITY& would result in each person's city being printed in the mail merge.

Anyone who has version 2.0 of Tracker/ST should send in their registration card with the serial number filled in, and we will automatically upgrade them to v2.03, free of charge.

Nevin Shalit
Step Ahead Software Inc.
New York, NY

Step Ahead Software has a new address. 496-A Hudson St., Suite 39F, New York, NY 10014 —START Ed.

CCITT Explained

I just finished the telecommunications article by Jerry McBride in the May 1990 issue. I learned a lot from it, but I was left with some questions. The article did not explain some of the modem features listed, like CCITT, MNP Levels 2-5 and External (External what?). Also, the article made a point of telling the readers to buy a modem with a built-in speaker, but then did not tell us if any of the featured products had one.

Carl Wade
Ventura, CA

CCITT means that the modem is compatible with the CCITT standard for 2400-baud modems. CCITT is a European agency, the International Consultative Committee for Telephony and Telegraphy. MNP refers to Microcom Networking Protocol, which is a method for correcting transmission errors caused by line noise. External means that the modem is an external unit (internal modems are installed inside the computer's case). All of the modems mentioned in the article have built-in speakers. — START Ed.

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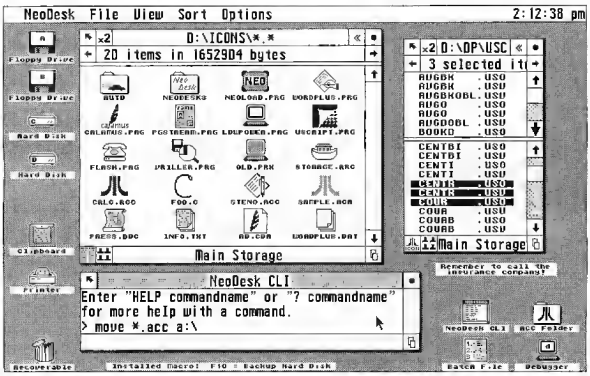

NeoDesk™ 3 is a complete replacement of the boring, built-in desktop that comes with the Atari ST. Its advanced, yet intuitive, graphical interface will make your computer both easier to use and much more powerful.

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NeoDesk introduced the idea of placing your commonly used programs directly on the desktop while pioneering the concept of assigning different custom icons for individual files and folders.

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Only NeoDesk 3 allows you to look at two different parts of the same window, thanks to its amazing *Split Window* feature. Of course, each window can be set to display text or icons, independently of any other window. Each window can even have its own sorting and text options.

NeoDesk is also smart, using all of its available memory for file copying so that as many files and folders that will fit into memory are read in at once. No more useless disk swaps, even hard drives benefit from its speed and efficiency.

Add some of the other NeoDesk 3 features, such as a brand new Icon Editor, keyboard equivalents, desktop picture, file templates, *Active Icons*, and *Hot Keys* (execute your favorite program with a single key), then you have more than enough reasons to buy NeoDesk. But for those of you who need a little more, read on.

NeoDesk 3 now offers a unique *File Clipboard*™ which lets you temporarily hold files and folders in memory while you are busy doing other things. In a way, you can think of it as an automatically expanding and shrinking ramdisk.

You now also have the power of *Macros*, with which you can automate any series of desktop operations like opening windows, copying files, running programs, etc. These can also have *Hot Keys* assigned to them.

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From low resolution to ultra high resolution, NeoDesk 3 supports up to 10 different resolutions in each system.

Of course, these features would not be useful unless they were easy to use. Rest assured, NeoDesk 3 has been designed to be "upwardly compatible". Use NeoDesk just like you used the original desktop, no need to forget all that you have learned.

It doesn't stop there. The included *Recoverable Trashcan* lets you recover files deleted with it at any time in the future. It was created using the *NeoDesk Developer's Kit*, which opens a whole new world of possibilities. There's also the *NeoDesk CLI* (both available separately), a complete window based command line interpreter which allows you to create pop-up menus, automate file operations, and much more.

No matter who you are, NeoDesk 3 has something for you. From helpful search capabilities to a powerful file reorder function. Thanks to its ability to remove itself from memory, it only needs about 35K of memory. Of course, there's lots more, which you can discover by ordering today!

NeoDesk 3 and the NeoDesk CLI are available from your local dealer, or order toll free by calling (800) 284-GRIB and get FREE 2nd Day Air (US only). Call or write for upgrade and other information.

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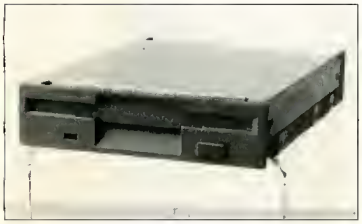
Atari recently began shipping a new color monitor, boasting two stereo speakers which take advantage of the STE's eight-bit, digital, stereo sound. The monitor is a complete redesign of the SC1224.

Data Base Computer Systems' Double-Sided Drive



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D. BOHL

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The Computer Museum
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Boston, MA 02210
(617) 426-2800

An educational videotape that explains how computers work by taking viewers inside a giant model of a desktop computer is now available. Produced by the Computer Museum in Boston with funding from the Intel Corporation Foundation, the 25-minute video uses the museum's new exhibit, the Giant Walk-Through Computer, to explain graphically and dramatically how computers work.

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Dragon's Loir II: Time Warp

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Elie Kenan Leaves Atari U.S. and Canada; Greg Pratt Named Manager

*By John Nagy for Z*Net*

Atari Corp. confirmed that the widely praised and respected new general manager for Atari U.S., Canada and France has resigned. Elie Kenan, who recently discussed future plans for Atari Corp. with developers at the WAACE and Glendale Atari shows, returned to France where he will continue in his capacity as general manager of Atari France. Greg Pratt, a financial officer at Atari, was named Kenan's successor.

Although the complete reasons for Kenan's departure, after so much public exposure and acclaim, may never be completely known, it is said by those close to the situation that the "official" comment from Atari will eventually be that Kenan found the United States to be too large and too culturally different from the Socialist France he is accustomed to.

However, it is known that after the WAACE show in early October, Kenan went alone to examine sites in the Boston area. Kenan had commissioned preliminary reports for a possible relocation of Atari U.S. to the Boston area, and speculation is that he found some sites that he wished to seriously consider. Shortly after returning to Sunnyvale, Kenan met with Jack Tramiel — an old friend and Atari's Chairman of the Board — who hired Kenan to come to Sunnyvale from Atari France. The subject matter of that meeting is unknown, but Kenan then returned to France after some hasty but clearly permanent farewells to Atari employees. It is suspected by some that Kenan's change of heart may have been prompted by some refusal by Tramiel of the control and free hand he had been promised in the reshaping of Atari in the United States.

Shortly after Kenan's departure, Greg Pratt was introduced to ranking employees as the new General Manger for Atari U.S. Pratt is a long-time Atari officer from the finance department who also ran the ill-fated Federated Stores operation near the end of that venture. At one point, Pratt attempted a leveraged buy-out of the troubled Federated Stores from Atari for himself and other investors.

While Pratt is thought by many at Atari to be a competent manager, reaction has been widespread and uniform — shock and fear of what this may mean for Atari Corp. Employees and developers who met with Kenan had high hopes for his plans at Atari.

WAACE Show A Success

from reports by Jerry Cross, Scott Lapham and other sources

Over 2,000 people flocked to the Washington Area Atari Computer Enthusiast (WAACE) Show at the Sheraton in Reston, Va. October 6 and 7, 1990.

Joppa Computer Products introduced JuST the FAX! This hardware/software combo sends faxes directly from your computer.

Alpha Systems showed two new products: JamMaster, a powerful digital-sampling synthesizer program, and Watchcart, an inexpensive clock cartridge.

After being dropped by MichTron, HiSoft was on its own, showing Lattice C version 5 and the new Harlekin utilities package.

Two 68030 upgrades were on hand. Gadgets by Small demonstrated a prototype of their upgrade for the Mega (12MB of RAM running at 18MHz). FAST Technologies was also on hand to show their version of a 68030.

Sliccware introduced SlicDTop, a Desktop replacement that features multitasking, code swapping, process queuing, unlimited windows, data sharing, code sharing and dynamic memory. The product was not commercially available at press time.

Newcomer Frontier Software demonstrated a cartridge-based clock called Forget-Me-Clock II.

Double Click Software had new versions of both DC Desktop and DC Utilities on hand.

The Atari Corp. booth was busy with STEs on display running demos to show off its colors and sound.

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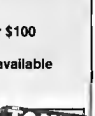

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From The Z*Net Newswire

★ A program known as TOS 2 is circulating on private bulletin boards. TOS 2 is apparently an early version of the new TT Desktop which will operate on an ST. While the idea of using it may be attractive, Atari Corp. cautions users that TOS 2 is a pirated file that belongs to Atari, and that it is an early version which is known to be incomplete and unstable. The use of TOS 2 is both illegal and unsafe to your system data.

Atari has stated that they will not release the TT Desktop for existing ST owners, ostensibly to avoid competition with the alternative Desktop developers (in its present form the TT Desktop is reminiscent of Gribnif's NeoDesk).

(According to Atari, the new GEM and TOS is called TOS 030 and will come in chip form for the TT only, although it is expected to be compatible with the STE. If Atari produces an STE-based Mega, as earlier reports indicate, that machine is also expected to feature the new TOS/Desktop, and to share the TT case and hard- drive design. The Mega STE would also be card-compatible with the VME bus of the TT and will run the 68000 microprocessor at a clock speed of 16 MHz.)

★ A criminal indictment for copyright infringement was handed down against Atari Taiwan Manufacturing Corp. and two employees in October of last year, following a court-ordered search of the company in April that turned up several suspected unauthorized copies of Ashton Tate's dBase III Plus and Lotus Development Corp.'s Lotus 1-2-3. Atari Corp. said the unauthorized copies were used by two employees without the company's knowledge and in violation of stated company policy.

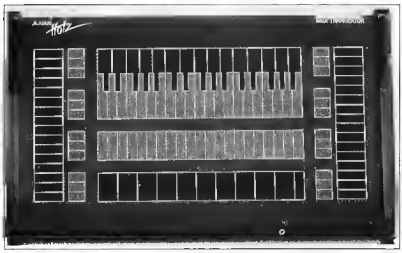
★ Frank Foster, formerly head of Atari's music division, left the company early in September in what is said to have been a mutual decision reached between him and Atari. His departure leaves Atari with no individual directly in charge of MIDI development and music-industry support.

★ Computer Shopper, reputed to be the largest computer magazine in the world, discontinued Atari coverage with the November 1990 issue. Editor-in-Chief Bob Lindstrom said that the decision was made after considerable market and supplier research. He added that Computer Shopper will continue to run major stories covering Atari products when they are warranted.

★ In a half-million dollar chip-piracy bust, Dennis Hayes of Cincinnati pleaded guilty to operating a scheme in which he sold more than 5,000 bogus Macintosh ROM computer chips between 1988 and 1990. Macintosh 128K ROM software information was copied into the chips which Hayes sold for between $130 and $195 per set. Hayes was one of several major chip suppliers for Mac ROMS, also used in Gadgets by Small's Spectre Macintosh emulators for the ST. Though Gadgets does not supply chip sets for their unit, and had no dealings with Hayes, it is known that many Atari users bought chips from Hayes at several Atarifests.

★ Atari Corp.'s long-awaited Hotz Box was scheduled for test marketing in Canada beginning in November. The Hotz Box, brainchild of record producer Jimmy Hotz, is being touted as the "non-musicians answer to making music." The unit will be sent out to a few educational test sites as well as a recording studio in the Vancouver area.

In October, the GEnie online service introduced a flat subscription rate of $4.95 (U.S.) per month including unlimited, non-prime-time access to more than 100 online products and services (not including computer hobby areas). The rate for U.S. access to those GEnie services not covered under the flat monthly rate has been set at $6 per hour during non-prime time for all three access speeds (300, 1200 and 2400 baud). The prime-time rate will remain at $18 per hour for all three access speeds. The $29.95 sign-up fee for the GEnie service also has been eliminated for all new subscribers effective immediately.



Atari began test marketing the Hotz Box last November.

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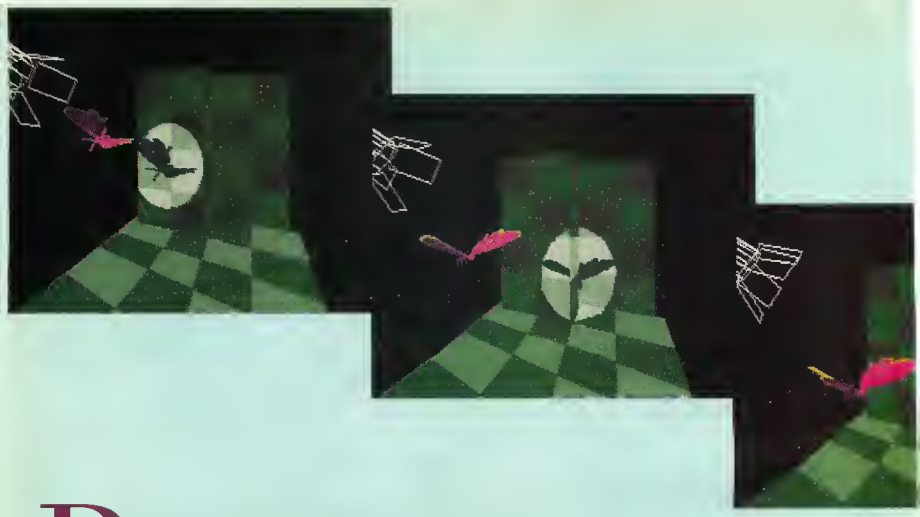

PICTURE THIS

Going One Step Beyond Cyber, Lexicor's Phase-4 System Produces Animation So Real, You'd Swear They Used A Movie Camera

BY GAVIN DOUGHTIE

The Tin Toy rolls across the floor, frantically banging his drum and squeezing his accordion. A towering baby totters after him, gurgling and trailing a long stream of drool. The Tin Toy scoots under the couch, only to find himself in the company of dozens of other frightened toys cowering in the darkness.

Reflected in the Tin Toy's shiny metal head is an image of the living room. The floor is hardwood with a deep grain. The sun streaming through the living room window glints off the crinkled cellophane of the Tin Toy's discarded package. The monster-sized baby's movements are lifelike, his drool especially disgusting. Although everything appears as real as any movie, none of it has been near a camera. The toy and the baby exist only as numbers inside a supercomputer.

Tin Toy was the first computer-animated film to win an Academy Award. The Pixar Corporation pro-

duced it using their line of photo-realistic computer graphics products. Pixar's hardware and software cost tens of thousands of dollars -- much too expensive for an individual artist or animator to consider buying for himself. The Atari ST, on the other hand, is within reach of all but the most starving of artists. And now, so is photo-realistic 3D animation.

Picking Up Where Antic Left Off

Although Antic Software's Cyber line of 3D modeling and animation tools gave Atari artists a taste of 3D graphics, producing an animation of any complexity required hours of programming and could only be crudely rendered due to the ST's limited resolution and palette. Furthermore, the ST was an "island" in the 3D world, unable to freely exchange objects and animation files with more powerful computers.

Dissatisfied with these limitations, Emmy Award-winning illustrator Lee Seiler formed Lexicor Software to produce the next generation of 3D animation products for the ST, Mega and TT. Lexicor's Phase-4 family of software lets nontechnical users create animation just as photo-realistic as Tin Toy.

In keeping with the Atari philosophy of "Power Without The Price," none of Lexicor's offerings will cost more than a few hundred dollars. In fact, an entire professional system including a TT, a Syquest removable-cartridge hard drive, Lexicor's custom 24-bit color board and all the necessary software will cost around $6,000 — less than the cost of the software alone for many comparable workstation-based animation systems, and far less than such a system would cost on either a IBM PC or Macintosh.

Seiler sums up the philosophy of the Lexicor system. "It's designed to be used by an individual artist on desktop hardware. Everything we do is designed for a person who's already an artist, who wants to use a computer because he wants to get into that market. We're not going to teach him how to be an animator; we're not going to teach him how to be a computer operator either. He needs to read the manual, but apart from that he needs to know nothing at all about computers."

Lexicor developer Paul Dana knows a good bit about computers, and he's no stranger to animation; START readers may remember him as the creator of the Cyber Stars desk accessory and the spectacular Fly By Night animation he and Robert Mills created with it. Dana explains why Lexicor chose Atari.

"We figured the ST was the very best computer to do animation on. The hardware on the Amiga may be better but the operating system's from hell. The PC has absolutely no consistency in hardware and you ►

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have about this much RAM to work with [he holds his fingers an inch apart] and I personally can't afford a Mac II. Most people are probably in the same financial situation I'm in. Also, the throughput on an Atari is just amazing — there are no wait states anywhere and it pumps graphics out at ridiculously high speeds."

Dana is writing the Chronos animation program; Atari 3D veterans such as Mark Kimhall and David Ramsden are working on other applications in the Phase-4 series. In its present form, Phase-4 connects the Atari 3D "island" to the mainland through four inter-related graphics applications and two hardware products for the ST, Mega and TT. The software products are Rosetta-3D, Chronos, Prism Render and Prism Paint.

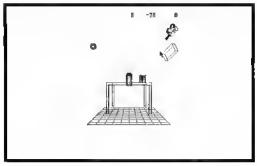
Rosetta-3D

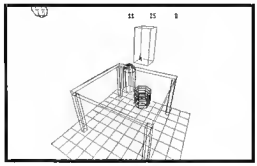
Just as the original Rosetta Stone was the key to translating Egyptian hieroglyphics, Rosetta-3D acts as a universal translator for 3D objects. It not only reads and writes object files created with CAD-3D or Cyber Sculpt, but also models created in most of the popular Macintosh, Amiga and PC-based 3D programs. Using Rosetta-3D, an object created on a Macintosh can be translated to Cyber Sculpt format, manipulated in that program on an ST, then exported as a .DXF file for use in AutoCad on a PC.

In addition, Rosetta can perform simple object manipulations in wireframe or point-cloud mode for maximum speed. Draft animation can be created a frame at a time in a manner similar to CAD-3D 2.0 without Cyber Control. Creating really serious sequences, however, requires Chronos, Lexicor's key-frame animator.

Chronos

In traditional cartoon animation, a





"key" animator draws only those frames necessary to describe a character's action. For example, if an animation sequence calls for Bugs Bunny to jump into his rabbit hole, the key animator draws a picture of Bugs crouched to leap, another picture of him in midair and perhaps another of him diving head-first into the hole. Then another, less experienced (and less expensive) animator draws all the intervening frames required to make Bugs' action seem smooth and fluid, a process known as tweening. In a key-frame animation system on a computer, the animator sets up the key frames of a sequence and the computer does the tedious job of tweening.

To demonstrate Chronos, Seiler creates an animation of a spaceship flying into a black hole, with the camera following on its own path. A nightmare to program in the old Cyber Control system, Seiler does it from scratch in two minutes using Chronos. Working in wireframe mode, he drags his spaceship model to a point high above his black-hole model. A wireframe box indicating the spaceship's object boundaries moves in real-time to indicate changes of perspective and orientation. He drags the huilt-in camera model to the other edge of the ST's monitor, points it at the spaceship and sets this as the starting frame of the sequence. He drags both models to new positions, rotates the spaceship model slightly to give it a banking motion, then sets another key frame. He repeats the process three or four more times, until the ship and camera are both at the bottom of the black hole. After telling the animation program how many frames are to come between each of the key frames, he instructs the computer to generate the scene in wireframe. In a few minutes, the machine has written a stunning 80-frame sequence to the hard disk.

In addition to moving objects around, Chronos can perform several different types of metamorphic animation. A sphere could transmogrify into a mermaid and back again, with Chronos computing the intervening objects.

Chronos also uses a simple yet extremely powerful technique known as cycling. To make a bird fly using cycling, the animator would first sculpt several different versions of the same bird, each with its wings in a different position. Let's say it takes 12 diffcrent models to smoothly show the wings flapping up and down. As before, the animator defines a path for the bird to fly along and sets key frames. The animator also tells Chronos that the bird is a cycled object; in each successive frame the next bird is used. When the twelfth bird is used, the cycle returns to the first bird model. Any number of objects in a scene can be cycled, at different rates, and each cycled object can include another cycled object (a bee buzzing around the bird's head, for instance).

Chronos renders sequences in more modes than CAD-3D: wireframe, wireframe with depth-cue (distant parts of the object are rendered with darker lines), hidden face, solid face, Gouraud shaded (smooth) and Phong shaded (smooth shading with highlights). While good-looking images can be pro- ►

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All Children's Programs Require a Color Monitor

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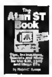

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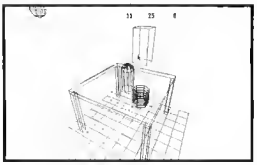
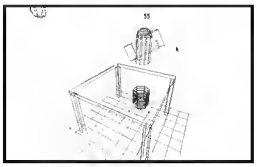
duced with Chronos alone, truly realistic animation requires the Prism rendering package.

Prism Render

Rendering, the process of actually computing how each pixel on the screen will look for a given frame, is the most time-consuming and crucial part of creating realistic-looking 3D animation. Sophisticated rendering can turn a crude wireframe sphere into a delicious-looking orange, complete with tiny bumps and "Sunkist" label.

Lexicor's Prism Render takes files created in Chronos and renders them as realistically as possible. Objects can be made to look like chrome, glass, wood and a variety of other substances. Light sources can be refined to bebave like the sun, room lamps, or colored spotlights. Even the atmosphere in a





scene can be made hazy. Prism will work in all Atari resolutions: 16 colors on an ST, 256 colors on a TT or 16 million colors on any Atari equipped with a 24-bit color board.

Prism Paint

Since an animation sequence often requires tweaking after the animation has been rendered, Lexicor has created Prism Paint, a full-featured painting program that can also be used for frame-by-frame animation, much like Cyber Paint. Prism Paint can also use the same hardware as Prism Render for painting in millions of colors.

RenderMan Compatibility

Though Prism renders quite capably on STs equipped with a 24-bit graphics card, Lexicor's software can also export animation files in Pixar's RenderMan Interface Bytestream (RIB) format. These text-only files function for 3D animation much as PostScript does in the 2D world, providing a standardized way to describe a 3D scene, including light sources, object motion and what materials the objects are made of. These files can

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be transferred to PCs, workstations or even supercomputers running Pixar's rendering software. With Lexicor's hardware add-ons, it may not even be necessary to go that far.

Hardware

To faithfully reproduce the many subtle variations in shade and color seen in the real world, photo-realistic computer graphics require a virtually unlimited number of colors on screen. Neither the ST's 4-bit (16-color) limit nor the TT's 8-bit (256-color) limit come close, so Lexicor is making a graphics card that will let Atari computers display 24-bit color (up to 16 million colors simultaneously.) Prism Render and Prism Paint will be able to take advantage of the hardware immediately, and since the card plugs into the cartridge port, it can be used with any ST, Mega or TT.

Lexicor is also creating a genlock/image-capture board to output images to videotape. Not only will this board let animation be recorded to videotape, it will also provide a means to bring an image from video into the Atari for manipulation. The board can output images in American NTSC, European PAL, or RGB "stream" format, overscanned and with sufficient simultaneous colors for realistic images. With the genlock feature, images can also be overlaid or "keyed" onto existing video images. Like the 24-bit color board, the genlock/image-capture board also plugs into the cartridge port of any Atari. The video board includes an expansion port for future products, such as a single-frame controller for videotape decks.

Setting Standards

"We [Lexicor] are setting new standards for Atari," says Seiler. "We're setting new file-format standards, new application standards and we will be putting the Atari user into true photo-realistic animation. Our developers have created stuff for the Atari that no one's ever seen, that you could never imagine possible."

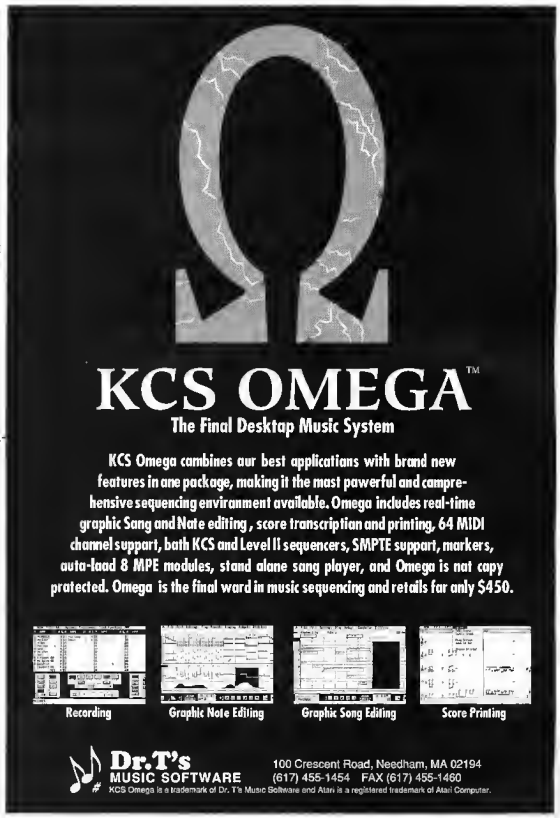
(*Editors's Note*: See a Phase-4 animation sequence. Open the DEMO folder on your START disk, then open the LEXICOR folder. Double-click on Player.PRG.)

Gavin Doughtie writes and directs for CU Productions in Hollywood, Calif. He conducted the Darrel Anderson interview in the November 1990 issue of START.

Products Mentioned

Phase-4 Animation Series, $775. Lexicor Software Corp., 58 Redwood Road, Fairfax, CA 94930 (415)453-0271

Also available from Rio/Datel, 3430 E. Tropicana Ave. #67, Las Vegas, NV 89121 (800)782-9110



Beginning Grammar

Your Computer Tutor

BY JONATHAN GRAEHL

Do you remember how much "fun" grammar class was? Well, for me it was about as exciting as watching paint dry or linoleum curl, and I'm sure that many of my fellow students felt the same way. But these days, with the advent of Computer Aided Instruction (CAI), the doldrums of grammar class can be eliminated. Beginning Grammar brings this technology to students through your ST.

Storting Grommor

The file GRAMMARC.PRG on your START disk is a self-extracting archive of Beginning Grammar. To un-ARC the program, double-click on GRAMMARC.PRG, choose Extract, then choose a destination disk from the item selector that appears. The program file GRAMMAR.PRG will he written to that disk. Double-click on GRAMMAR.PRG, and the program will start. You'll see the opening screen, then you'll be asked to press a mouse button to continue on to the main menu.

Pick A Quiz, Any Quiz

Once you're at the Main Menu, you have several options. You can go to one of the grammar quizzes, turn the music on or off (toggle), view the credits, get help, or quit. The sound toggle button is located at the lower left-hand corner of the screen, and the credits/help button is just to its right.

Troveling With Nouns

In this quiz you're asked to classify a word as a person, place, thing, or not a noun. This can he accomplished by clicking with the mouse on the box of your choice. Correct answers are rewarded with a green traffic light and music. Of course, if you've turned the music off, you won't hear it, but you will get a flashing screen. If you give a wrong answer, the correct box flashes off and on. Your score is indicated by a vertical bar in the upper left-hand corner of the display.

Hide And Seek With Verbs

The object of this exercise is to click on the box with the verb in it. Should you make the right choice, you'll hear some happy music and increase your score. The wrong answer gets you some musical punishment while the correct answer flashes on and off. Your success with verbs is represented by the number of "tags" you earn.

Dining With Adjectives

Which word on the menu is an adjective? If you think you know, click on it. Correct answers are rewarded with the famous flashing screen or music, but wrong answers are indicated by a blinking underline under the correct answer. Your score is shown on the cash-register box in the upper left-hand corner.

Pick A Door With Adverbs

This quiz may resemble the infamous shell game, but if you can recognize an adverb, you've got a sure win. Select the door that contains the adverb. Correct answers will he rewarded as usual. Your score is shown in a box at the center of the bar at the bottom of the screen.

Pitching With Pronouns

The pronoun quiz puts you out on a baseball field. Here, you must locate the field position that contains a pronoun. A correct answer gives the batter a strike. An announcer (box in the upper right-hand corner) indicates the success of your attempts. Your score is indicated by the number of strikeouts.

In Conclusion (Introductory Phrose)

If you have an STE, or have upgraded your ST to TOS 1.4, you can make it easier for kids to use Beginning Grammar by making it auto-start. To do this, put GRAMMAR.PRG on a disk by itself, then click on its icon once so that it is highlighted (make sure you're in low resolution). Then go to the Options menu and choose Install Application. Click on the Auto button, then click on Install. When you get back to the Desktop, go back to the Options menu and choose Save Desktop. After the computer writes a DESKTOP.INF file to your disk, write-protect the disk, then show your child how to put the disk in your A: drive and turn on the computer. You will find that GRAMMAR.PRG starts automatically every time this disk is booted!

Jonathan Graehl is a student by day and a programmer by night. He enjoys making life miserable for his parents. This is his first program for START.

AT A GLANCE

Program:	Beginning Grammar
Type:	Educational
Requirements:	512K, low rez
Arcfile:	GRAMMARC.PRG
File:	GRAMMAR.PRG

Is the word in the suitcase a noun? Click on the box that describes the word.

CYBORG AT THE CONSOLE

An Automated Mixing Overview

BY
PAUL M. KEEFE
AND
JIM PIERSON-PERRY
Music/MIDI Editor

It's 4 a.m. and you want to die. You've spent the last 12 hours mixing the one song that will launch your career — and it's sounding worse and worse by the minute. If only you had captured that great mix you did at 8 o'clock last night! Well, don't just sit there feeling sorry for yourself. Apply a little prevention at your next keyboard session. Put your ST to work for you: Automate the mixing process. With automated mixing, you can keep as many takes as you want, plus have the freedom to experiment for more creative effects.

MIDI mixers range from sequencer software to hardware MIDI controllers to fully automated consoles. The type you need depends on your budget and intended use.

Software Mixings

If you only use MIDI tracks in your songs (synthesizers, drum machines, etc., with no taped acoustic instruments), forget specialized hardware. All you need to be able to do is record, edit and play back continuous-controller messages — part of virtually all sequencer programs. You can mix the volume levels of the individual tracks in your song, changing them on the fly as often as needed to achieve the perfect balance. This assumes your instruments respond to MIDI volume commands (continuous controller #7 in the MIDI definition), common in today's gear, but missing in some older pieces like the Casio CZ-101. If you can't change the volume through software, you'll need a hardware mixer.

Sequencers offer three approaches to controller editing: text, graphic and real-time. Most sequencer packages offer all three. Text editing works best to set starting volumes, step changes at defined times, or mute instruments. Creating fade-in/fade-out effects or altering the mix during the song is easiest with graphical editing. This can be done dynamically while the music plays, or any time afterward.

Different sequencers afford different degrees of editing sophistication. The MIDI-Track ST series provides control of a single MIDI channel at a time. You can choose or change the editing channel at will and, while replaying your sequenced song, move the screen fader with the mouse to change the volume. Cubase lets you do this

with up to eight real-time screen faders; you get the full 16 MIDI channels with Creator/Notator.

For best results with real-time mixing, your sequencer should "chase controllers" on the playback. This means if you start from any point other than the beginning, the sequencer searches for the last controller setting (if any) and applies it before playback begins. Otherwise, you may miss earlier changes and find gross inconsistencies in the final mix.

One trick is to set volumes to zero on a channel when its respective instrument isn't playing. This cuts down on background noise. Just remember to pop the volume back up a beat or two before the instrument kicks in again.

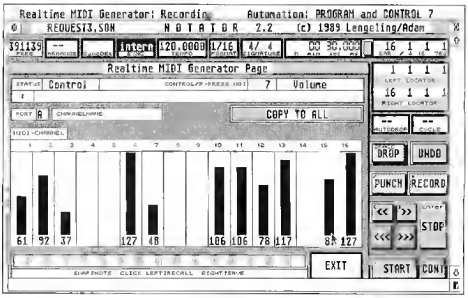
Hardware Controllers

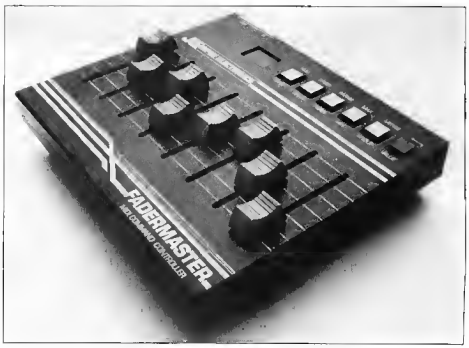
What if your sequencer doesn't implement controller editing, or you prefer the feel of a real fader over a mouse? No problem. There are inexpensive hardware devices you can insert into the MIDI data stream to send out controller information. The basic design of these units is the same. To generate data for a specific controller on a specific MIDI channel, just assign it a knob, slider or other physical control.

The simplest of these — the Yamaha MCS2 (no longer in production) — controls a single channel. You can use a slider, foot controller or even breath controller to generate the MIDI volume data. This goes into your sequencer and is directly incorporated into the song. You can have individual sequencer tracks that contain nothing but MIDI volume data — each one a different mix experiment.

Moving up the ladder is the MRC (MIDI Remote Control) from Lexicon. It provides four assignable faders for real-time control.

The top of the class is J.L. Cooper's FaderMaster, with eight fully-assignable faders to transmit any and all controller commands. Aptly described as the "Swiss army knife" of MIDI, it is easily configured to send volume controls, patch changes, note on/off, sysex commands or virtually anything else in the MIDI definition. It can follow and display incoming volume data from a sequence versus your current fader settings, so you can match them before making any change. Beyond mixing applications, it's incredibly handy for communicating with modern synths and signal-processing gear that lacks adequate front-panel controls. J.L. Cooper even offers editing software for the ST to simplify programming the FaderMaster.





Top: Use Notator's Realtime MIDI Generator as a software 16-channel mixer. Changes made with the mouse are captured in real time. Blank channels have MIDI volume set to zero.

Bottom: FaderMaster, from J.L. Cooper, is the "Swiss army knife" of MIDI technology.

VCA-Based Mixing

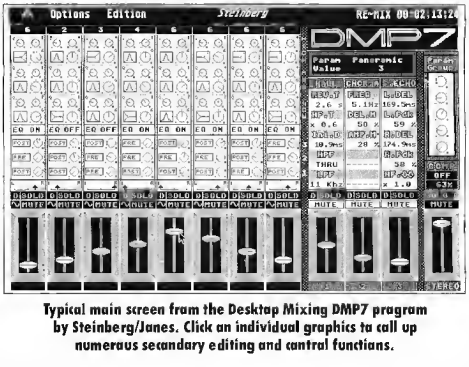
To deal with both MIDI and taped tracks you need some form of MIDI-controlled mixing board. Either of two options re- ►

sponds to MIDI: the mixing board itself, or an intermediate device in the audio chain. We'll begin with the latter.

In general, intermediate devices are called VCAs — Voltage Controlled Amplifiers. Audio outputs from synths and tape decks feed into the VCAs and are attenuated in response to MIDI controls. Subsequent output feeds into your mixing board, where the faders should be left untouched and wide open (the balancing is already done). The best known of these VCA boxes are the JBL/Urei Twister Pac, Iota MIDI-Fader and J.L. Cooper MixMate. All provide eight input audio channels, with each usually controlled by a separate MIDI channel.

The Twister Pac is a single-space rack-mount unit. It can take snapshots of the relative VCA settings and store them in 99 memory locations. Snapshot mixing leaves a lot to be desired, compared to dynamic control. About the best use for it is to save favorite reverb and effects settings for instant recall. Twister also offers real-time control via a front-panel knob or eight on-screen faders under dedicated software control. The front-panel knob lets you adjust the audio level one channel at a time and save it to your sequencer (mixing a song one channel at a time is tedious at best and not recommended). The software faders are great for real-time control — except that if your computer is already playing a sequence, you need a second ST to control Twister. Right now, Twister is overpriced ($1,750) for only doing snapshots.

The Midi-Fader is also a snapshot mixer, but much more reasonably priced. Combine it with a FaderMaster and you have a full, MIDI-controlled, automated mixer for about $800. Each MIDI-Fader channel has a solo and mute setting. A bar graph in the LCD window shows the approximate attenuation for all eight channels. You can save its 128 snapshot settings as sysex data into your sequencer or librarian software, something Twister can't do.



Typical main screen from the Desktop Mixing DMP7 program by Steinberg/Jones. Click an individual graphics to call up numerous secondary editing and control functions.

MixMate is a different breed. This little machine (similar in design to the FaderMaster) performs all of the above functions, includes a built-in sequencer and can sync to SMPTE and other time codes.

SMPTE stands for the Society of Motion Picture and Television Engineers and is the time-code standard of video and film industries. (*Editor's Note*: See "What Is SMPTE" in the November 1990 issue of START.) It is also the preferred timing base for most professional and many home-recording studios.

If your sequencer can generate SMPTE, you can easily lock MixMate into it. If not, MixMate can generate its own SMPTE time code, place it on your multitrack tape and send MIDI time code to lock into your sequencer. Rather than simply write controller data into your sequenced song, MixMate takes over as the brains of your system. It controls fader moves from its internal memory, synced to your tape deck, and acts as the timing base for your sequencer.

Then there's MixMate Plus, ancillary software to MixMate. It increases MixMate's onboard sequencer memory from 4,400 events to 44,000 — more than enough memory for most applications. A screen mixer shows current fader settings and SMPTE time. You can't change mutes or move the faders with the mouse. Recorded fader settings in the current sequence memory are shown as solid white faders, while phantom faders depict the actual fader positions on the MixMates.

The newest member of the VCA group is the Audio Control Module from Steinberg/Jones. It's like the VCA devices but uses different electronics for a cleaner and quieter audio output, according to the manufacturer. It provides eight individual inputs and outputs, along with a stereo mix. The faders may be controlled by software such as Cubase. For a given MIDI channel, eight faders are governed by sequential continuous controllers (e.g., 13 through 19). This protocol allows up to 16 modules to be controlled simultaneously (one per MIDI channel) for a maximum of 128 faders.

Pro Solutions

VCA mixing is also popular in professional recording studios. Two major players are Mimix from Steinberg/Jones and MAGI II from the uhiquitous J.L. Cooper. Both can be configured to work with virtually any studio mixing console and synced with SMPTE or MIDI time code. MAGI II internally generates ►

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time code; Mimix needs a separate interface unit such as the SMP-24. The same setup applies here as with the MixMate — your sequencer becomes a slave to the mixing unit, in turn synced with a tape deck.

Mimix can run as a stand-alone application or share a single ST with other programs (e.g., Cubase) under Steinberg/Jones' M-ROS multitasking system, which comes bundled with selected Steinberg/Jones software. It uses a sophisticated graphics interface to display and control audio signals for individual groups, effects reruns, and master output. A cue-list scheme manages mixing changes and can trigger any type of MIDI event. Each channel also has a programmable noise gate for enhanced control of audio dynamics.

MAGI II is similar to Mimix and handles from 16 to 64 channels. It can take on the entire mixing job, from generating SMPTE code to controlling your sequencer. A remote unit, similar to an expanded FaderMaster with 16 individual and four group-assignable faders and mutes, controls the mix — just like riding an actual console. Alternatively, you can retrofit MAGI II into almost any console to work directly from your existing faders. Other software features include the ability to generate MIDI events at any point in the cue list and "off-line" editing of a mix without tying up the console.

Another approach to professional mixing is to use a mixing board that directly responds to MIDI control, without any intermediate devices. Choices here run from memorized mute settings to full control of all parameters — you get what you pay for. For starters, the Tascam MM-1, a 20-channel rack-mount unit designed especially for synths, stores snapshots of the mute settings in its internal memory. You can send a MIDI-program change command to the MM-1, either manually or embedded in a sequence, to restore the associated mute settings.

At the top end, in both flexibility and price, is the Yamaha DMP7, a digital eight-channel console with complete MIDI implementation. It digitizes incoming audio at a 44.1KHz sampling rate with 16-bit resolution (CD quality) and can directly read/write to DAT (digital audio tape) for professional mixes at a reasonable cost. All mixer functions are controllable via MIDI commands, including level, pan, parametric equalization, mute and solo switching. The faders even move automatically to track your mixing program on the playback. Built-in signal processing effects, from delay lines to reverbs, occur in the digital realm to keep your work noise free.

For facile operation, Steinberg/Jones has teamed up with Yamaha Europe to release the Desktop Mixing DMP7 software package. It controls up to four DMP7s at a time, with full graphic control of mixer functions and cue-list event triggering (optional SMPTE sync via the SMP-24 interface). Advanced functions let you perform audio-processing tricks such as ganging parameters across different channels to respond to a single group fader.

The newest member of the Yamaha mixer family is the DMP11, a rack-mount, eight-channel, younger brother of the DMP7. It offers more memory locations to save its settings and additional signal-processing effects, but less parametric equalizing and only two effects sends and no automated faders.

Final Mixdown

MIDI mixing is here to stay. But before you run out for an automated console, evaluate your needs. It makes little sense to buy new gear if your present sequencer can get the job done. On the other hand, if you've been thinking of cloning extra hands to run more faders, start looking at automated solutions.

Part-time musician Paul Keefe lives in Manchester, N.H.

Products Mentioned

Audia Central Module, $479; **Cubase**, $495; **Desktop Mixing DMP7**, $590; **Mimix**, starts at $5,995; **SMP-24**, $1,295. Steinberg/Jones, 17700 Raymer St., Suite 1001, Northridge, CA 91325 (818) 993-4091

Creator, $349; **Natatar**, $649. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025 (415) 327-8811

DMP7 Digital Mixer, $3,995; **DMP11 Digital Mixer**, $2,395. Yamaha International, 6600 Orangethorpe Ave., Bueno Park, CA 90260 (714) 522-9011

FaderMaster, $299; **FaderMaster Software**, $29.95; **MAGI II**, starts at $3,950; **MixMate**, $995; **MixMate Plus**, $1,240. J.L. Cooper, 13478 Beach Ave., Marina Del Rey, CA 90292 (213) 306-4131

MIDI-Fader, $499. Iota Systems, Box 8987, Incline Village, NV 89450 (702) 831-6302

MIDITrack ST series: EditTrack II, $99; **SMPTETrack II**, $499. Hybrid Arts, 8522 National Blvd., Culver City, CA 90232 (213) 841-0340

MM-1 Keybaard Mixer, $1,095. Tascam/TEAC, Professional Division, 7733 Telegraph Rood, Montebello, CA 90640 (213) 726-0303

MRC (MIDI Remote Control), $400. Lexicon, 100 Beover St., Walthom, MA 02154 (617) 891-6790

Twister Pac, $1,950. JBL/Urei, 8500 Balboa Blvd., Northridge, CA 91329 (818) 893-8411

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ON DISK

HIDE-O-RAMA

The Desktop Clutter Killer

BY GREG "MADDOG" KNAUSS

My hard disk was crowded, packed with various odds and ends. I have a spell checker with six independent dictionaries. There's a game with almost a hundred separate sound and picture files. My desktop publisher uses a dozen or so .HLP, .OVL and .RSC files. In short, my Desktop was a mess. Though each program has its own folder, I often needed to search through the contents of a window just to find the executable file. I couldn't delete these things — each program needed them, yet they were getting in my way.

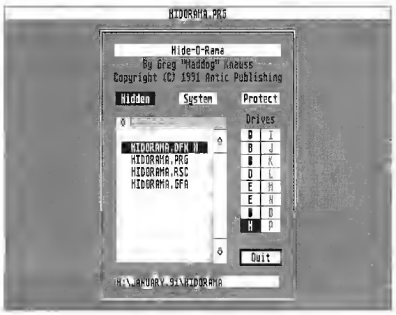
Clearly I had to find a way to prevent a file from appearing in a Desktop window or a file selector, yet still be visible to the program that needed it. I needed Hide-O-Rama. Hide-O-Rama will let you move through each disk drive in your system, into and out of each folder, and mark files to hide. A "hidden" file won't appear on the Desktop or in file selectors, yet when a program tries to access it, it will work as normal. Additionally, Hide-O-Rama will let you toggle a file's write protection, which will prevent that file from accidently being erased.

How To Use Hide-O-Rama

You'll find all the Hide-O-Rama files in the HIDORAMA folder on your START disk. For you programmers, HIDORAMA.GFA is the source code and HIDORAMA.DFN is the definition file for the resource. For those who just want to use Hide-O-Rama, copy HIDORAMA.PRG and HIDORAMA.RSC into the same folder.

When you first run Hide-O-Rama, the root folder of the current drive will

he displayed. The arrow buttons on the right side of the screen can be used to scroll up and down through the list. To hide a file, simply click on the filename to highlight it, then click on the Hidden or System boxes at the top of the screen. (Hidden and System are two different ways to achieve the same result, each with its own foibles, listed below.) Your choice will be highlighted, the drive will be accessed, and H or S will appear to the right of the filename. If you were to quit Hide-O-Rama at this point, that file would not be visible from the Desktop or standard file selector. Additionally, if you click on Protected, you'll set the file's write-protect status (which is also alterable from the Show Info menu item of the Desktop). A P appears next to a protected file.



Using Hide-O-Rama is easy. Simply click on the filename, then click on Hidden or System to hide it.

How Hide-O-Romo Works

When Hide-O-Rama "hides" a file, it actually sets either the hidden or system bit in the file's attribute byte. According to what this byte says, a file can be made write protected, marked as a folder, or any of a number of options. Neither a hidden nor system file is displayed to the user, but most programs can access them as normal.

However, some programs can't seem to find some hidden files. My spell checker, for instance, won't work correctly if its configuration file is hidden — it says that it doesn't exist. Though hiding files for most applications isn't a problem, if a program suddenly stops working, try either using the other hider bit — uncheck Hidden and use System or vice versa — or simply unhide the program's more important data files.

Though the hidden and system bits generally achieve the same thing, there are a few differences between them. For instance, you cannot hide resource (.RSC) files because the system will be unable to find them — for some reason, the system's resource loader ignores files that are hidden but not those that are systemed. But in general, try hiding a file before systeming it, if only because System was designed for use by the system's support files (my hard disk's boot program is the one example that happened "naturally" on my computer) and Hidden was meant for more general uses.

If you're curious about file attributes, they can he changed with a **GEMDOS(67)** call, an explanation of which is in the GFA BASIC 3.0 manual.

Whot Not To Hide

While Hide-O-Rama was intended to hide files that programs need and users don't, it can just as easily hide anything else and you should take care not to go merrily hiding everything on your system. You probably shouldn't hide executable files (.PRG, .TOS, etc.) because then you won't be able to run them from the Desktop, and hiding things like word-processor files would mean that they would be inaccessible from the standard file selector.

And At No Extro Cost . . .

If you program in GFA BASIC 3.0 and are interested in a way to get information about files in a directory — their date, size, attributes or anything else — look at the subroutine **get_dir** in the HIDORAMA.GFA code. It demonstrates use of **FSFIRST(), FSNEXT()** and the Disk Transfer Address (the area in memory where file information is returned), all of which are handy if you are doing any file manipulation.

The End

Hide-O-Rama, in short, works. I've only run it once —ideally that's all I'll need to — and yet it's saved me both time and frustration each time I've used my ST. I hope it does the same for you.

In addition to spending far too much time on his computer, Greg "Maddog" Knauss is editor of the University of California at San Diego's Erratically and occasionally attends class.

AT A GLANCE

Program:	Hide-O-Rama
Type:	Utility
Requirements:	512K, Any rez
Folder:	HIDORAMA
Files:	HIDORAMA.DFN HIDORAMA.GFA HIDORAMA.PRG HIDORAMA.RSC
Language:	GFA BASIC 3.0

ON DISK

HURRY!

Simple Isn't Always Easy

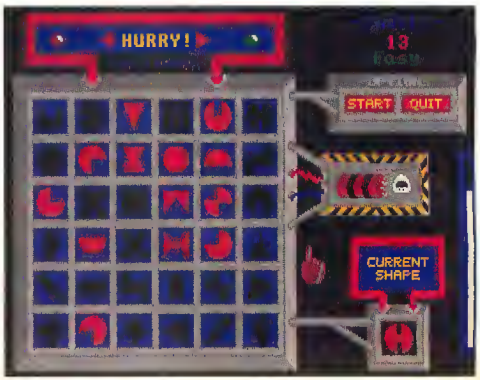
BY J PEACH

J Peach (yes, his first name is J) presents one of the most frustrating and addictive games ever published in START. Strange, it all looks so easy . . .

Hurry! is a puzzle game which requires fast reaction time and some pretty good hand/eye coordination. You must race against the clock, placing all kinds of shapes into their matching slots in order to defuse a timebomb (how's that for originality?). If all 36 shapes are placed in their matching slots before time runs out, the connections will be severed, and you'll be the hero of the day. However, if you can't take the pressure and become too jittery, it's curtains for ya'. If you think you have what it takes to become a hero (and you know that you do), then read on.

Hurry Up And Get Ready

First, you need a color monitor hooked up to your ST. ►



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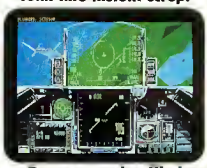

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(*Editor's note*: Hurry! is not compatible with the STE.) Then, you need to run the self-extracting ARC file HURRYARC.PRG on your START disk (read the disk instructions). When you're through with that, double-click on HURRY.PRG. You'll see the title screen, and a scrolling message with information about the game. Simply press the key [1] for Easy, [2] for Normal or [3] for Hard to select the difficulty level. Now you're at the game screen.

Click on START to begin your game, or QUIT to return to the Desktop. If you choose START, the mouse pointer will automatically move down to the CURRENT SHAPE window. You're then prompted with 'READY!', and then 'GO!'. Quickly click on the current shape, place it over the matching slot, and click the mouse button again. Once this is done, return to the CURRENT SHAPE window and repeat the process. Meanwhile, the time bar, located at the right side of the screen, will progressively work its way upwards. Once it reaches the top, time's up and the bomb explodes. If you're able to place all 36 shapes correctly before time runs out, a new randomly-generated game board will appear and the chaos starts all over again.

Scoring is determined by the number of properly placed shapes; if you place 10 shapes in their matching slots before time runs out, your score will be 10. The score is located at the upper right corner of the game screen.

AT A GLANCE

Program:	Hurry!
Type:	Game
Requirements:	512K, low or medium rez, TOS 1.0 - 1.4
Arcfile:	HURRYARC.PRG
Files:	HURRY.PRG

Take A Hint

The object of Hurry! may seem simplistic, but the execution is not. I recommend setting the difficulty level to Easy for first-time players. Soon, your reaction time will increase and you'll be able to locate the matching slots much faster. Level 3 (Hard) should prove challenging (but not impossible) for all players. Here are some more tips.

The game screen will flash when time has run low (10 seconds before detonation). Try not to scare yourself when you see that. Concentrate!

To place a shape into its proper slot, you need not put the shape exactly over the slot. As long as the center of the shape (the "hot spot") is in the box surrounding the matching slot, the shape will be placed where it belongs.

If you wish to change the difficulty level at the game screen, you can press [1], [2], or [3] on your keyboard. The difficulty level cannot be adjusted in the middle of a game, it can only be adjusted at the beginning of a new game. The level indicator is located right below the score.

Where's That Shape?

Hurry! demonstrates our inability to see and remember what is right in front of us. If you find yourself getting frustrated, take the time to familiarize yourself with the positions of the shapes before you press that START button. Otherwise, when time is running out, the screen is flashing at you, and you still can't find that slot for the shape that looks kind of like an H, well, try not to panic. It's gotta be there somewhere . . .

J Peach is 19 years old, and started programming back in the days of the Atari 400. This is his first program for START.

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DIALING FOR DATA

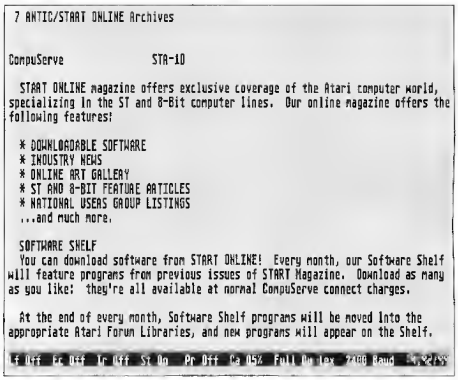
Bulletin Board Systems And On-Line Services

BY CHRISTOPHER ROBERTS

Telecommunications Editor

If you're like most computer users you may not understand the excitement that revolves around "telecomputing" (computer-modem communications). Few computer owners realize the wealth of fast and easy information that can he found through a modem. Imagine making your own plane reservations without having to go through an agent. People do this and other great things all the time on-line.

But making plane reservations is a very small part of telecomputing, and that's why this column was conceived. If you own a modem but still aren't sure what it's good for, or are thinking of buying one, follow along and you may learn a few things.



For ST owners, a modem and a telecommunications program such as Flash are all that's needed to begin telecomputing.

Bulletin Board Services

A BBS is a non-profit service run hy local computer users. These BBSs are free to the public and normally cost you only the telephone connection charges. A standard BBS offers one or more of the following services.

• **Electronic Mail** Also known as E-mail, electronic mail is way to privately send a text message (and in some cases attached software) to a different user of the BBS.

• **Sub-Board Message Service** The "heart" of a BBS system, sub-boards are usually arranged in categories or subjects. The messages you find there are public conversations which any user can join. The subjects range from computers to movies to the latest industry news and rumors.

• **Public-Text Databases** Many BBSs offer news stories and data compiled by the systems operator (sysop, pronounced sis-ahp). These text files are stored in a database format that you can read while on-line or download for reading later.

• **Upload/Download** This is the most controversial of all services offered by local BBSs because it lets anyone send to the "host" (BBS) copies of shareware and public-domain programs that they think ►

others might find of interest. However, if a BBS is run correctly (and legally), these are the only types of programs that can be exchanged within the host BBS. You can access the files other users have uploaded to obtain your own copy.

An important side note: when you call a BBS be careful that you are logging onto a legal BBS, not a "pirate board." I have had people say to me, "I want to start a BBS so I can get all that expensive software for free." If this is why you want to telecommunicate, be aware that you would be breaking the law. The fines and other penalties can be massive. Besides, program designers put too much work into their software not to receive fair compensation.

• **Games** Downloadable games can he as simple as Hangman or as complex as a Dungeon Master-type role-playing adventure.

Notional On-Line Services

Compared to a local BBS, there's little difference in the type of services offered by national on-line services such as CompuServe, GEnie and Delphi. It's the quality and quantity of extra services that local BBSs are unable to offer that gives their national (and often international) counterparts a special appeal.

On-line services offer paper mail service, electronic stores (where you can buy anything from furniture to stereos), graphic-based games, stock reports, dictionaries, encyclopedias, travel agencies and far more than can be listed here. But these on-line services can only do these wonderful things because they charge a fee based on your baud rate (how fast your modem recieves and transmits information), the time of day you use the system and how long you're connected.

One other major difference from your local BBS is the sheer diversity of the on-line service's user base. For instance, people call GEnie from all over the United States and Canada and some from Europe. And the sysops of GEnie and CompuServe regularly schedule on-line conferences with Atari Corp., CodeHead, Gadgets by Small and ICD, to name a very few.

Downloadable games can be as simple as Hangman or as complex as a Dungeon Master-type role-playing adventure.

On-line Limits

Now that you know what telecomputing offers, let's look at its limitations.

The telephone rings and the boy connects his (very old) modem to the phone handset. "Shall we play a game?" says the computer voice that answers. Well, War Games was a fun movie, but more than slightly off the beam. Getting into a system to start a war or fix your grades is basically impossible for the common user to do by accident. Besides, it's illegal, so don't even try it.

There still are very few places that let you pay your bills or do your banking by modem. My local supermarket doesn't deliver so they don't have a way for people to order groceries by modem. The local video store has a BBS that I can call to see what's in stock, but I can't place an order. This doesn't mean that it won't happen eventually; it's probably just a matter of time.

The Cost Of Telecomputing

Telecomputing can be very expensive if you're not careful. If you call an on-line service, be sure to call in the non-primetime hours or you may be in for a shock when the bill comes. It's important to keep track of your current hours on-line to avoid $200 to $300 phone bills (it's happened to me!).

You also can run up a phone bill quite easily because the BBS may be in a different call-zone. The difference could be up to 50 cents a minute. Also, baud rate can affect expenses. If you have a 1200-baud modem and call a 50-cent-a-minute service, a DEGAS picture could cost you $1.50 to download. A 2400- baud modem could cut this time and money by half.

Modems And Viruses

Because of its many and varied users, a BBS is an excellent way for a computer virus to spread and there's usually no way to know that you're downloading one. It's the responsibility of the sysop to test for viruses before an item is uploaded to the BBS. But the fact is that most BBS sysops can't test everything — there simply isn't enough time. On-line services do check every file for copyright infringement and virus infestations but they don't always catch them all.

The ST is pretty much immune to boot-sector viruses on hard disks. But the ST floppy is a prime target for infestation. Macintosh and MS-DOS users have trouble with hard-disk viruses quite often because of their disk-based operating systems. Therefore it's always a good idea if you download anything from a BBS to run it through George Woodside's VKILLER to protect your disks. (*Editor's Note:* This program and an accompanying article on computer viruses can be found in the May 1990 issue of START.) There are several Macintosh and IBM virus-protection programs as well. You should use them if you own a PC or Macintosh emulator. ■

NEODESK 3

Everything GEM Should Be And More

BY MARIO PERDUE

Most ST users will agree that the GEM Desktop is a great way to communicate with their computer. Atari's graphical interface is easy to learn and use. But after you do use it for awhile you begin to notice that it lacks in some key areas. (That time you accidentally threw a file in the Trash Can and found out it was gone for good was your first clue.)

The problem is that the standard Desktop doesn't go far enough and Atari has made no significant enhancements to it until very recently with the so-called TT Desktop, which isn't available for STs. In its present form, the Desktop only offers a sample of what's possible through GEM, but leaves the experienced user crying out for more.

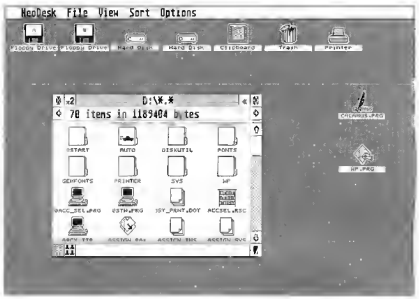


Figure 1: NeoDesk's default Desktop. Note the clipboard (a kind of RAM disk) and the printer (lets you batch print up to 10 text files) icons.

NeoDesk 3 offers an alternative. It's a stand-alone program that completely replaces the built-in GEM Desktop. NeoDesk builds upon the familiar point-and-click operation that makes GEM so nice to use and then adds a number of new features.

NeoDesk Basics

When NeoDesk is loaded into memory it establishes itself as the new system Desktop. From this point on all standard file and disk operations are performed by NeoDesk.

The first time you run NeoDesk you'll enter the default Desktop (see *Figure 1*). This Desktop is not too different from the one you know and love from GEM. The floppy-disk icons replace the file-cabinet icons that Atari supplies, and, if you have a hard disk, you'll notice that the floppy-disk and hard-disk icons are different. The Trash Can for deleting files is still there, though it too looks different.

As you explore your new Desktop, the similarities between GEM and NeoDesk begin to fade. For instance, NeoDesk has a printer icon; simply drag an ASCII text file to this icon to get a printout. (The printer icon works in conjunction with an accessory that batch prints while ►

AT A GLANCE

Program:	NeoDesk 3
Type:	Alternate Desktop
Company:	Gribnif Software P.O. Box 350 Hadley, MA 01035 (413) 584-7887
Price:	$69.95
Requirements:	512K, hard drive recommended
Summary:	Excellent and very powerful replacement to the standard GEM Desktop.

you continue to use your computer. Up to 10 files can be spooled to the printer at one time.)

On the NeoDesk Desktop you'll also notice an icon that resembles a clipboard. This is a kind of RAM disk that automatically grows and shrinks as you use it. It is especially handy if you only have one floppy disk and wish to make several copies of a large number of files.

Program icons in NeoDesk can be placed directly on the Desktop. Say you have Word Writer buried deep within a folder labeled WP (for word processing). With NeoDesk you can drag the Word Writer icon directly onto the Desktop and access it from there—no need to click through folder after folder. For even easier access, NeoDesk offers a "hot key" option much like CodeHead's HotWire through which programs appear with a simple press of a key.

Cleorer Windows

As with the standard Desktop you can open a window by double-clicking on a disk or folder icon. You'll then see most of the controls with which you are familiar. The only thing that is missing is the horizontal scroll bar. This is because NeoDesk automatically wraps the icons to fit the window.

But NeoDesk includes a few unfamiliar window controls. To the right of the Close button is the Duplicate Window button. Here you can open a window with the same disk and path specification—handy for making copies several levels deep.

In the lower left corner is a button that toggles between text and icon display for that window only. Unlike the GEM Desktop, NeoDesk handles each of its windows separately, so windows with text can exist on the screen with windows of icons.

To the right of this button, you'll find the Select All Items button which will select or de-select all files in the current path. This icon will act on all the files, not just the ones displayed in the window. The standard methods of selecting files (including the rubber box and the shift key) are also supported.

Just below the status line on the window is a double line called the Split Window bar. If your window is large enough, you can slide this bar down and split your active window. This lets you look at two places in the same path without having to open a second window, useful for viewing the contents of folders with a large number of files such as desktop publishing fonts.

One final note on windows: NeoDesk opens seven of them at a time. The GEM Desktop allocates only four at a time.

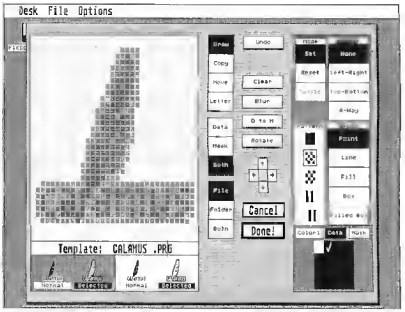


Figure 2: NeoDesk 3 includes an excellent icon editor.

A Picture Is Worth A Thousand Words

Perhaps the most noticeable, if not the most important, of NeoDesk's features is its ability to create custom icons. Imagine how easy it will be to find your telecommunications package if it looks like a telephone. This is just one of the example icons supplied with the package.

NeoDesk includes an excellent icon editor (see *Figure 2*). You can call the icon editor at any time from the Desktop. Much improved over previous versions, it provides all the tools necessary to create new icons and background patterns. (Icons and patterns can even be created using two colors.)

Other NeoDesk Features

The list of NeoDesk features is exhaustive — half the fun is in finding out what they are. For instance, NeoDesk can be removed from memory when you run another program, especially important for 520ST owners. It can also do warm and cold reboots and includes a screen saver which keeps the Desktop from burning an image into your monitor.

NeoDesk is resolution independent, which means that it supports any resolution that can be displayed on the ST. This makes it compatible with Moniterm, Bigscreen, Hyperscreen, Overscan and TT monitors.

A command-line interpreter (CLI) is included on the NeoDesk disk to support the use of batch and batch-takes-parameters files. *A CLI* provides the ST with an MS-DOS-like interface.

Quibbles, Kudos

NeoDesk 3 is a very useful and powerful replacement for the GEM

Desktop — there's really not much that you can't do with it. About the only thing it doesn't do is display directory trees in a manner similar to Dosshell in MS-DOS 4.01. It's surprising that this capability has not yet been implemented on the ST.

The 129-page manual explains how to use NeoDesk and its many features in excellent detail. It's a must read — don't just skim through it (like I did the first time) because there's something important in just about every paragraph. A 50-page addendum is provided for those who upgrade from version 2 to 3.

The problems with CAD-3D and Zoomracks that plagued earlier versions of NeoDesk have finally been resolved. I tested NeoDesk 3 with every program that I have, from paint and CAD to word processing and desktop publishing. I used every feature of NeoDesk that I know about and I was unable to find any significant bugs. The icon editor in version 2.03 would sometimes crash the resource file, but this version has corrected that problem. NeoDesk 3 is, as far as I am able to determine, bullet proof. (*Editor's Note*: NeoDesk is now compatible with Double-Click's DC SEA, the self-extracting compression method used on the START disk.)

One of NeoDesk's most powerful features is the Icon Editor.

And Some Conclusions

I'd like to say that NeoDesk is a program that every ST owner should have, but that would be stretching things. When you think about it, no one really *needs* a replacement to the GEM Desktop, but a product like NeoDesk is invaluable if you do want one. This is especially true for hard-drive owners who use their computer on more than an occasional basis.

But for all its shortcomings, the GEM Desktop fills the job of file-management quite adequately; to the casual ST user, NeoDesk may appear as overkill. And $69.95 is a lot to pay for something that may never be used effectively. It really boils down matching the product with your needs. If you need the power and flexibility NeoDesk offers, go for it; if not, save your money.

Mario Perdue is a CAD specialist living in McCordsville, Ind. He wrote the comparison of five CAD programs in the November 1990 issue of START.

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In Which DeMunn Thanks Her Mouse, Futral Thanks His Son And Knauss Says No Thanks

Rings of Medusa

Rings of Medusa

BY ELIZABETH DEMUNN

The hype proclaims: "You'll love this game — we guarantee it!" Love? Well, you'll definitely establish a long-term relationship with this German import, depending on your ability to cope with logistics, statistics and linguistics.

Consider the language. In translation something is lost, including the player. The brief manual is frustratingly low-wattage and printed in minute italics. You're pretty much on your own to decode the stilted phrases and discover the complicated method of play. Rings of Medusa has a European flavor that takes some getting used to, as does warm beer.

I Know This Story

Does this scenario ring a bell? Evil goddess Medusa is trying to take over Morcnor, a tranquil little kingdom on an backwater planet. She's out to conquer the world with her army from Hell. You, as young

prince Cirion, must find five rings, place them in a temple, and call forth Medusa for the final and deciding battle. In the meantime, you must trade goods, build an army, buy cargo ships and battleships, establish mines, discover treasure, explore a continent and four islands, and generally keep busy. The year is 1432 and time goes by a day a second. It took me seventy years to snuff Medusa.

In Rings of Medusa, money is everything. Don't get serious until you have thirty or forty million at least. You start out with a small loan from the bank. Being a gambler, I headed right for a pub and started playing a bastardized version of blackjack. Soon I had enough money to buy some horses and wagons to begin trading.

Squint City

So much is going on at one time that the graphics are necessarily small. For example: A screen depicting a town contains a temple, a bank, a park, a store, a pub, an armory, a barracks, a jewelry store and a harbor if it's on a coast. Plus you have a top screen with a zoom-view of the buildings and a bottom screen with assorted action icons. It's a miniature miracle; take time to examine the remarkable detail of every scene.

The game scrolls effortlessly screen by screen, with changing coordinates and dates always visible above the main screen. To find a treasure or a mine you send out scouts who report success or failure after several days. Then try to pinpoint its exact pixel with a trembling mouse. Frustration sets in. My first mouse ran away to join a research lab. His click quit. But other than an occasional [Return], Rings of Medusa depends on an agile, muscular mouse.

Rings of Medusa is cluttered with lists. Don't bother recording prices, quantities or populations. They change. There's a notice board in town to type in important facts. Use it. Mapping isn't necessary, but I did sketch a rough map of the main continent with its 30-plus towns and castles.

Save, *save*, SAVE after the least little stroke of luck. Your pre-formatted save disk can hold at least thirty games.

Cirion To The Rescue

Rings of Medusa isn't for everybody. There are no sub-quests. There are no riddles or puzzles to solve, no never-ending mazes. I admit to spending happy hours shopping and exploring.

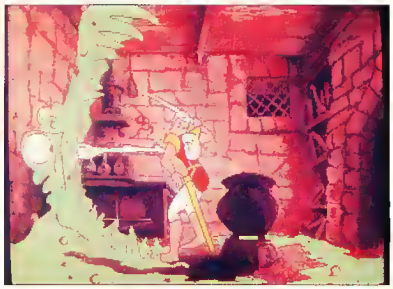
Many of my adventurers are long lost in dungeons too difficult to navigate. Rings of Medusa was an ego trip because I finally saved a lovely little kingdom from the forces of evil — forever?

Dragon's Lair

BY GARY FUTRAL

"Jump right ... now!" my coach said.►

Dragan's Lair



Just Another War In Space

AT A GLANCE

Game:	Rings of Medusa
Type:	Role-playing game
Company:	Digitek Software 708 W. Buffalo Ave. #200 Tampa, FL 33603 (813) 222-0006
Price:	$39.95
Requirements:	512K, color monitor
Summary:	Patience and a forgiving mouse are the keys to winning this absorbing adventure.

The evil Black Knight's sword sparked and clanged against the floor. He chuckled as he watched Dirk dance. I pressed the appropriate key, causing Dirk the Daring to jump to an adjacent tile to avoid the crackling electrical jolt that raced from the sword tip. But it was too late. Dirk was dirt.

I pressed the appropriate key, causing Dirk the Daring to jump, but it was too late.

"No! No!" my coach yelled at me and threw his hands up in the air. "You didn't do as I said. You waited too long!"

"Hey, kid. Don't yell at me like that. I'm your father, remember?" My son quieted down and calmly resumed showing me what to do.

All right. I admit I can't play Dragon's Lair. In fact, I would say that if you are under 10 years old you may not want to buy this game. You may find it too easy! Actually, I'm only kidding. The only reason my son did so well is that another kid at his school already had it and told him what to do — at least that's what I kept telling myself.

For those who missed the original arcade version of Dragon's Lair, ReadySoft gives you a second chance to experience cartoon animation. The graphics are computer generated and a joy to watch, listen and play. You really feel like you're watching a cartoon as you interact with it.

As Dirk the Daring, your objective in Dragon's Lair is to enter a castle, make your way past eleven scenes of traps and horrendous monsters to rescue the fair Princess Daphne.

I used the word "scenes" because those are exactly what you are presented. Each scene is predetermined. It is up to you to figure out the correct key combinations (up, down, left, right, swing sword) to get Dirk out of a particular predicament.

Dragon's Lair allows you to use either the joystick or the keyboard. I found that unless you have a joystick that can lock out the diagonal positions the keyboard gives you better control.

So, grab some popcorn, invite your friends and, if you have a pre-teen son, take my advice: keep him handy.

AT A GLANCE

Game:	Dragon's Lair
Type:	Graphic adventure
Company:	ReadySoft 30 Wertheim Court, Unit 2 Richmond Hills, Ontario L4B 1B9 (416) 731-4175
Price:	$59.95
Requirements:	512K, color monitor
Summary:	Better than a Saturday-morning cartoon, because you're in the middle of it.

Just Another War In Space

BY GREG KNAUSS

Every once in a while, a reviewer finds a game he desperately wants to like. The program usually comes from a small company, maybe a start-up, and he admires their fortitude. The game usually has several features to respect — unique tricks performed by a sole programmer — and he can easily see how it came to be professionally published. Regretably, more often than not, the program also has a fatal flaw, something that is fundamentally wrong with it, something that prevents the reviewer from recommending the game. Just Another War In Space has such a flaw.

In J.A.W.S., the player commands the forces of either the Federation or the Empire, which are engaged in a space-borne civil war. You can play seven scenarios, ranging from a simple clean-up operation involving little more than launching a few missiles at enemy craft to a full-blown rebellion that takes place over an entire star cluster. J.A.W.S. is an incredibly complex program. It offers an impressive amount of realism, and has enough variables and options to thrill the tactics buff. Track speeds, measure angles, and, for the truly hardcore, the manual offers mathematical formulas to calculate acceleration and trajectory.

Unfortunately, all that impresive realism is lost while playing the game. The user interface J.A.W.S. employs is, in a word, horrible. Non-intuitive and slow, the interface (ignoring the sparse vector outlines of ships) is actually text-based! You almost could play this program on a teletype and not notice any difference. Pseudo-GEM menus and buttons are available, but they are a far stretch from the real thing.

Just Another War In Space has the potential to be not just another computer game. It is a sophisticated program, a strategy game with a lot to offer those willing to muddle through its archaic interface. With a

AT A GLANCE

Game:	Just Another War In Space
Type:	Strategy
Company:	Azeroth Publishing 3020 Issaquah-Pine Lake Rd. Suite 341 Issaquah, WA 98027 (206) 392-9941
Price:	$49.95
Requirements:	1MB, color monitor, double-sided drive
Summary:	The interface avoids GEM, so avoid this game.

GEM front-end, I would easily recommend it to anyone looking for detailed space combat, but as it is, only the dedicated are likely to want to take the time.

Just Another War In Space has the potential to be not just another computer game.

Fire Brigade: The Battle for Kiev, 1943

REVIEWED BY WOLF GRIFFEY

In November 1943, the Russian and German armies met in what was to become the largest mobile battle ever to be found. It began with the movement of the elite Soviet 3rd Guards Tank Army and was countered by the German "Fire-Brigade," the 48th Panzer Korps.

That World War II battle is replayed in Fire Brigade. This is the type of simulation the hard-core player wants. The features — review staff plans, receive reports, rest troops, attach and detach units, send attack/defense orders, set mission limits — make it possible to act as a true top commander of troops would. You can play the computer, another person, or even a game networked via modem or cable.

The Battle for Kiev was a 50-day campaign, so take your time with this simulation and enjoy the challenge.

AT A GLANCE

Game:	Fire Brigade
Type:	War game
Company:	Panther Games P.O. Box 5662 Derwood, MD 20855 (301) 977-3379
Price:	$50
Requirements:	512K for mono or two-color version, 1MB for four-color version
Summary:	As close to the real thing as you'll find in silicon.

Actress Elizabeth DeMunn performs regularly in her hometown of Buffalo, NY. Chemical engineer Gary Futral lives with his wife and three children in South Carolina. Greg Knauss can speak knowledgeably about the anti-Federalist stance of several members of the Continental Congress. Wolf Griffey is a former military pilot.

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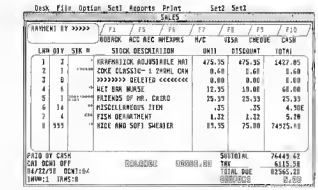

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MULTISYNCH MONITORS

Your One-Stop Resolution Shop

BY DAVID PLOTKIN
Hardware Editor

There's a joke among computer pundits that goes like this: How many programmers does it take to screw in a light bulb? Answer: None, that's a hardware problem.

All kidding aside, in the coming months, in this column we will discuss the world of Atari hardware. We'll cover computers, printers, disk drives, modems — any piece of hardware that has anything to do with Atari computers, including some that normally do not.

Talon Technologies' Omniswitch lets you connect a multisynch monitor to your ST.

Monitoring Your World

One of the most important pieces of equipment you have in your ST system is your monitor. This is your window on the world the ST presents to you.

Atari offers seperate color and monochrome monitors for your ST. Until now, you had to use these -- there were no low-cost third-party monitors you could use without internal hardware modifications to your computer. And if you wanted all three ST resolutions, you had to have two monitors.

But while the Atari monitors do a fine job, there are several drawbacks (besides having to have space for two monitors) to the fact that they've been the only game in town. Most notably, they're quite small. The picture area of a standard SM124 is just under 12 inches (measured diagonally). However, there's a substantial black border around the screen, so the working area is more like 9.75 inches (measured diagonally). There's no easy way to expand the picture area (though we'll look at some not-so-easy ways in the future), so you're basically stuck with the small screen.

Another drawback is that Atari monitors can be quite difficult to find. For reasons that only Atari knows, the SM124 has been in short supply since the beginning of 1990.

The Alternative

Most present and potential ST owners may not be aware of multisynch monitors. A multisynch monitor can produce both color and monochrome modes in one monitor, alleviating the need to own two different monitors. They're more expensive than the Atari monitors, but are comparable in price to two Atari monitors combined. Plus, they're available in all sizes, up to 25 inches diagonally. Let's take a look at what a multisynch monitor is and how you'd go about connecting one to an ST.

Some Background

The multisynch monitor originated in the IBM world. When the PC was first developed, it had only monochrome text. This was followed shortly by a color mode called CGA, capable of producing four colors on a 320 x 200 pixel screen. Before long, owners of PCs outgrew CGA, and a new standard developed, called EGA. This mode could show 16 colors in 320 x 200 pixels, or four colors in 640 x 350 pixels. A while later, yet another standard emerged, called VGA, with even more impressive characteristics — the ability to display 256 colors in 320 x 200 pixels, or 16 colors in 640 x 480 pixels.

As you can imagine, each of the color modes required different things from a color monitor. The primary difference is that each mode required more information to be displayed on the screen — more colors, more lines of resolution, more pixels on each line. With each increase in graphic capability, a better, faster monitor was needed.

Until now, there were no low-cost third-party monitors you could use with the ST.

The speed of a monitor is measured by its scan rate, and with each increase in graphics, the scan rate of the monitor had to be higher to remain in synch with the graphic signal coming from the computer. The problem was that you never knew what kind of a program you might run — some were CGA, some EGA, some VGA. The new graphics cards in the PCs could produce signals consistent with any of the modes, depending on what the software told it. But short of owning three different monitors, what could you do? The answer was a multisynch monitor — one that could sense the scan rate demanded by the computer and automatically synchronize to that rate. Before long, a whole host of well-known companies brought multisynch monitors to the market.

Scan rates are measured in cycles per second, also referred to as hertz or Hz. The horizontal scan rate is quite a bit higher than the vertical scan rate, and is thus measured in hundreds of cycles per second (KHz). The normal range of scan rates that a multisynch monitor can synchronize to is 15KHz to 36KHz horizontally and 45Hz to 90Hz vertically. This range lets the monitor synchronize to CGA, EGA and VGA. There are monitors that have higher scan rates so that they can synch to extended VGA, but these cost quite a bit more and are unnecessary for ►

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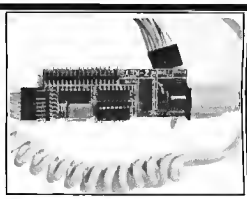

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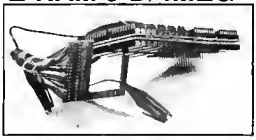

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What It All Means

Now that we have all that out of the way, let's look at what it means to the Atari owner. The ST has two different scan rates, which is why it requires two monitors. For color modes (low and medium resolution), the scan rates are 15.8KHz horizontally and 60.3Hz vertically. In monochrome mode, the rates are 31KHz horizontally and 70Hz vertically. Thus, a standard multisynch monitor can automatically synchronize and produce both color and monochrome modes from a single monitor.

Making The Connection

So, how do you connect a multisynch monitor to your ST? It's not too difficult to build a cable, but the easiest way is the purchase Omniswitch from Talon Technologies.

How many programmers does it take to screw in a light bulb?

This small box has a port on the back to which you attach a standard ST monitor cable to its corresponding port on the ST. There are two multisynch monitor ports (because there are two different types of cable that can be used for a multisynch monitor) to which you attach the cable that comes with your multisynch monitor. Plug in the end of the multisynch cable to the monitor itself, and you now have a monitor capable of displaying all three resolutions.

Caveats

When used with an ST, multisynch monitors have a significant border, so that a 14-inch monitor produces an active picture area hardly bigger than that of a standard Atari monitor. Some monitors have controls that adjust the picture size, which can help to eliminate the useless border. However, increasing the picture size in color mode means you'll have readjust it when you switch to monochrome mode.

Also, you may see monitors advertised (for a considerably lower price) as "multiscan." These are not the same as multisynch. A multiscan monitor can automatically synchronize to a certain fixed set of scan rates — those corresponding to CGA, EGA and VGA on the IBM PC. These rates will do the ST owner no good. ■

Products Mentioned

Omniswitch, $89.95. Talon Technologies, 243 N. Highway 101, Suite 11, Solona Beach, CA 92075 (619)792-6511

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STOS $39
Stos Compiler $23
Atari
1040STFM $Call
Mega-2 ST $Call
Mega-4 ST $Call
Monitors $Call
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The YEAR *In* REVIEWS

A DOLLARWISE GUIDE TO THE FRESH, THE FABULOUS AND A FEW FORGETTABLES

If you're going to plunk down big bucks on software and hardware, you want to know ahead of time what you're getting. This is why reviewing products is one of the most important services START magazine provides. In your hand is a guide to over 100 products, each reviewed in a 1990 issue of START. It's a great way to start the new year! Pick a category, pick a product, and see what the best-known writers in the business thought of it. For all the details, check out the full-length review; issue months are given at the end of each summary.

APPLICATIONS

Canvas

Canvas, Microdeal's 4,096-color graphics program for the ST and STE, is a program that tries to do too much and falls short in the basic areas of simple design and user-friendliness.

It runs in all three resolutions and can use the STE's 4,096 available colors. By switching palettes during the horizontal blank period every fourth scanline, Canvas can switch color palettes 50 times a screen and display all 4,096 colors on screen in a single image. Think about it, however: if you want to display all 4,096 colors, you have to set the palette switchpoints and define up to 50 separate palettes for a single image. It takes planning and it takes labor and, frankly, the results are just not worth the effort.

Furthermore, there is no manual, only online help; Canvas creates a whole new set of filename extensions that are not used in any other program; I've wandered into modes where I have a cursor with no response to mouse or keyboard; and the 3D functions in Canvas do not include shading or rendering.

The bottom line is obvious: I don't like Canvas and I don't recommend it.

Andrew Reese, December

Canvas, $29.95, Microdeal, 3201 Drummond Plaza, Newark, DE 19711 (302)454-7946

Findex V

Findex V is an anomaly among today's popular ST databases. It's a free-form program that lets you store anything from names to whole pages of text; you retrieve your data by searching for words or parts of words contained within your file.

The author created the program originally for the Sinclair, then released versions for the IBM PC and the ST. Its command-line heritage shows up the instant you load Findex — the ST version doesn't use GEM. All commands are located within one of Findex's three menus. Many commands are confusing, non-mnemonic acronyms like "SDAT" and "SETC." (SDAT sets the date, and SETC sets foreground color.)

Findex is an interesting concept that didn't quite translate from DOS to the ST. It's fine for address files and recipe files, but its complicated commands make it difficult to use.

Karen Gordon, February

Findex V, $49.95, E. Arthur Brown Co., 3404 Pawnee Drive, Alexandria, MN 56308 (612)762-8847

Readpic

Readpic uses a very clever algorithm to implement optical character recognition on the ST for any compatible image file. Compatible image files include DEGAS screen files (32K), STAD (a European format, seen in Megamax's Sketch) and .IMG files.

The Readpic manual, though translated from German, is good, and suffers from little of the confusing phrasing common to such efforts. Readpic seems to work and could be quite a time saver for people with lots of text to get into their computer.

David Plotkin, December

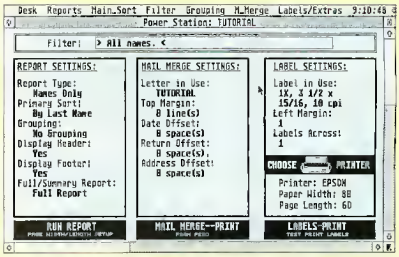
Readpic, $89.95, Datel Computers, 3430 E. Tropicana Ave. #67, Las Vegas, NV 89121 (800)782-9110

Tracker/ST Version 2.0

Tracker/ST is a mailing list database that lets you compile a list of names, addresses, phone numbers and associated information, then use that list to generate form letters and mailing labels in an impressive variety of formats. It is menu-driven and employs on-screen buttons, but is hampered by a nonstandard interface and some functions do not work under TOS 1.4 (*Editor's Note*: This is fixed in version 2.03).

The problems with the interface are because it was written in compiled Superbase command language.

Tracker/ST



Canvas

This language is pretty fast and loose about the "rules" for programs on an ST. For example, many alert boxes do not have the heavy box around the default choice.

Making allowances for the interface, Tracker/ST is an excellent database for handling phone/address lists and simple mail-merge needs.

David Plotkin, November

Tracker/ST, $79.95, Step Ahead Software Inc., 496-A Hudson St. #39F, New York, NY 10014 (212)627-5830

COMPUTER-AIDED DESIGN

Athena II Version 2.0

I tested a beta of version 2.0. Unfortunately, a manual did not accompany the program, so I had to rely on my own resources to find a solution anytime something appeared to be missing. Fortunately, the program is easy to learn.

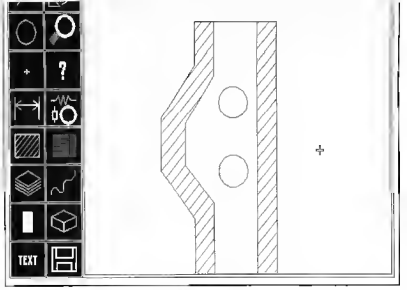
Athena's user interface is ►

reminiscent of a paint program. You're presented with a series of icons along the left side of the screen which select the major functions. Once a function is selected, a submenu pops up in the center of the screen that lets you set the specifics of the command. Since this type of interface is common to many GEM applications, ST users will feel at home with it. However, when working in a drafting environment, I find this to be slightly annoying. I prefer to have the graphics I am working on visible at all times. Having my design covered periodically tends to break my concentration.

There were many capabilities that I feel are necessary for professional drafting which are not available in Athena. It is, however, a good choice for home use, or where you have limited drafting needs and/or a tight budget.

Mario Perdue, November

Athena II version 2.0, $99.95. Iliad Software, 1470 S. State St., Orem, UT 84057 (801)226-3270



Athena

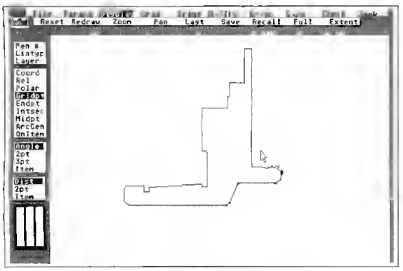
(as opposed to English).

BeckerCAD comes with supporting libraries. These libraries include electronic schematic, hydraulic/pneumatic and architectural applications.

There is nothing about this package that I found difficult to use. The user interface is easy to learn. It won't take you long to draw that room addition or that model rocket you've been wanting to build for the last several months. For most personal and even some small-business uses BeckerCAD will suffice.

Dave Edwards, March; Mario Perdue, November

BeckerCAD ST, $95.00. Abacus, 5370 52nd St. SE, Grand Rapids, MI 49512 (616)698-0330



Drafix

BeckerCAD ST

BeckerCAD is a German import and has a reasonable collection of features and performed well in timing tests. Abacus has done a competent job translating the manual into American

BetaCAD Version 1.0

(*Editor's Note*: Latest version is 2.0.) BetaCAD is a unique program in many ways; it takes a completely different approach to CAD. Many of the "normal" CAD commands were missing. It is the author's contention that you only need a few commands to get the job done and the problem with most CAD programs is the sheer number of commands that do exactly the same thing in slightly different ways.

I wholeheartedly agree. It is nice to see a CAD program that doesn't compete feature for feature with every other program. This streamlined approach makes BetaCAD very easy to learn.

I really enjoyed BetaCAD because it had all the "power" features of the more expensive programs, but left out many redundant commands that can get in the way. Nobody wants to be a slave to a CAD system. BetaCAD does a great job of giving the user just the commands needed without getting in the way of designing.

Dave Edwards, January

BetaCAD, $99.00. BetaCAD, 31 Millard Road, North Auleboro, MA 02760 (508)695-9175

CADjA

This import is so new that I only received a partially-disabled demo version to evaluate.

The user interface is somewhat like DEGAS in that the command menu fills the entire screen and is toggled with the right mouse button. I found this to be annoying; however, the icons are fairly well-designed and their arrangement on the screen is somewhat logical.

Some commands and modifiers are available only through keyboard entry. Again, I found this to be irritating.

I didn't encounter any problems with CADjA. It seems to be a fairly solid, bug-free product. Once the manual is completed, this program will be a strong contender in the mid-priced CAD arena.

Mario Perdue, November

CADjA, $395.00. Datel Computers, 3430 E. Tropicana Ave. #67, Las Vegas, NV 89121 (800)782-9110

Drafix

Drafix was ported from the IBM and as such does not use the standard GEM interface. However, the interface is easy to use so this doesn't cause any real problem. The only irritant is that it is assumed that you use a three-button mouse. As we all know, there aren't three buttons on an ST mouse. What you then must do is use the right button as the middle button and both buttons as the right button (the left button is, of course, the left button). A little bit confusing, but you get used to it.

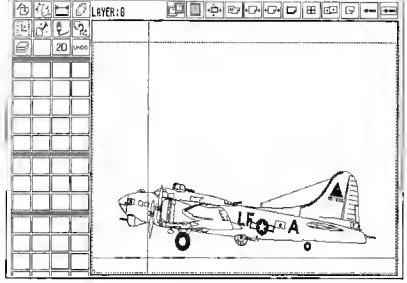
Overall, Drafix is an excellent package for home and small-business use. Unfortunately, Foresight will not publish further upgrades or enhancements.

Mario Perdue, November

Drafix, $195.00. Foresight Resources Corp., 10725 Ambassador Drive, Kansas City, MO 64153 (800)231-8574

DynaCADD

DynaCADD is, without a doubt, the best CAD program on the ST. It is also



DynaCADD

the best CAD program that I have seen running on any microcomputer. And it's fast. In many cases, faster than CADDS 4X, a very high-end drafting machine.

DynaCADD supports both 2D and 3D entity types, the only ST program to do so. This makes it possible to look at a part from any angle to help visualize its shape. Four different views of a 3D model can be displayed on the screen at any given time. These views can be mixed with 2D graphics for dimensioning.

The documentation supplied with DynaCADD is excellent. It includes both a 2D and 3D tutorial and a complete command reference. Each command includes a clear example of how it is used from the icon interface as well as from the command line.

DynaCADD is the only CAD program that I recommend for professional use (it's a bit expensive for home use). I have used it in a production environment on 3D applications and it performed beyond my expectations.

Mario Perdue, November

DynaCADD version 1.34, $995.00. ISD Marketing Inc., 2651 John St., Unit 3, Markham, Ontario L3R 2W5 (416)479-1880

DESKTOP PUBLISHING

Calamus

(*Editor's Note:* Current version is 1.09N.) There's no question that Calamus is the most powerful of the four DTP programs evaluated for this article. Quite simply, it contains more features and will perform more functions than the others. In fact, it could very well be the most powerful DTP program available right now for any popular computer system.

The question a would-be buyer needs to ask is "Do I need this much power?" For the novice user, Calamus can best be described as intimidating. Upon booting it up, new users will find themselves staring at no less than 35 icons, five menus and five alphanumeric fields.

Once you become familiar with the program, however, it operates with an elegant smoothness. After spending a few hours with Calamus, I began to appreciate the flexibility and total control provided by its command hierarchy. For the ST user interested in serious DTP, the investment will be well worth it.

Scott Wasser, April

Calamus, $299.95. ISD Marketing Inc., 2651 John St., Unit 3, Markham, Ontario L3R 2W5 (416)479-1880

Clip Art! Disks

Each disk contains over 100 high-resolution graphics saved in DEGAS (.PI3) format. Each screen of data averaged about 10 graphics, resulting in fairly small pictures. As a result, they were unuseable with a system using a laser printer but print out nicely on 9- and 24-pin printers. Virtually every subject matter is covered in these collections, including computers, medicine, religion, animals, food and holidays. This is by far the nicest collection I have seen with the widest variety.

Dan Fruchey, March

Clip Art! Disks, $19.95 each. Magnetic Images, P.O. Box 17422, Phoenix, AZ 85011 (602)435-2006

Desktop Publisher ST

Anyone who has used any other Timeworks program on the ST knows that they are generally characterized by ease of use, flawless operation and enough power to handle most tasks. Desktop Publisher ST fits right into that same mold.

Desktop Publisher ST comes with approximately 200 pictures and nine sample publications. You can use them as they are or modify them for your own documents.

Timeworks claims the novice user can be working within 60 minutes, thanks to the "Quick-Start Mini-Manual." Desktop Publisher ST's documentation is unquestionably the clearest, easiest to follow and most complete I've seen.

Desktop Publisher ST will work very well on the most basic 520ST with color or monochrome monitor and single-sided disk drive. Since disk access is somewhat slow and frequent, program operation improves dramatically with a hard drive.

Scott Wasser, April

Desktop Publisher ST, $129.95. Timeworks Inc., 444 Lake Cook Road, Deerfield, IL 60015 (708)948-9200

Draw Art, Scan Art

Both collections are of the highest quality with a nice selection of subject matter. Draw Art is an original collection of 117 .GEM metafiles created by graphic artist Tom Ethan. The files are precise, clean and easy to work with. Scan Art is a collection of 114 bit-mapped graphics saved in .IMG format. The pictures were scanned from leading clip-art source books and cleaned up before being saved individually.

Dan Fruchey, March

Draw Art, $69.95; Scan Art, $49.95. Migraph Inc., 200 S. 333rd St., Suite 200, Federal Way, WA 98003 (206) 838-4677

Fleet Street Publisher

MichTron, one of the biggest software supporters of the ST, resurrected Fleet ►

Desktop Publisher ST

Street after the importer of the original version withdrew its support. Based on the performance of its version 2.1, Michtron made a wise move in reviving Fleet Street.

Fleet Street is a very capable performer whose assets include ease of use, good documentation, versatile text-editing functions, a nice collection of clip art and excellent print quality.

But it also lacks some sophisticated features that prevent it from being labeled a state-of-the-art DTP program. It will not support text flow from one page to another, can only import .IMG picture files and ASCII text files, and it lacks the ability to wrap text around graphics.

However, Michtron has released Fleet Street Publisher version 3.0 which supposedly addresses those shortcomings and adds some powerful new features.

Scott Wasser, April

Fleet Street Publisher, $149.95. Michtron, 3201 Drummond Plaza, Newark, DE 19711 (302)454-7946.

Image Cat

How many times have you searched for a particular graphic, knowing it exists in your software library, only to give up after sifting through a dozen disks with no success? Well, there's help. Image Cat is a utility package from Wiz Works that locates your graphics files quickly with a minimum of fuss.

There are three main cataloging programs on the disk, comprising the bulk of the utilities. Image Cat is designed to print image (.IMG) graphics in catalog format. Pic Cat is identical to Image Cat except that it is designed to print DEGAS, NEOchrome and Tiny format pictures in all resolutions. For Spectre GCR owners, Mac Cat lets you print pictures designed for the Macintosh.

All of the programs in the Image Cat package are self explanatory and easy to use. My only wish is that the utilities be included in one program. On the whole, however, Image Cat is a godsend to any desktop publisher or graphic designer.

Dan Fruchey, December

Image Cat, $24.95. Wiz Works, P.O. Box 45, Girard, OH 44420 (216)539-5623

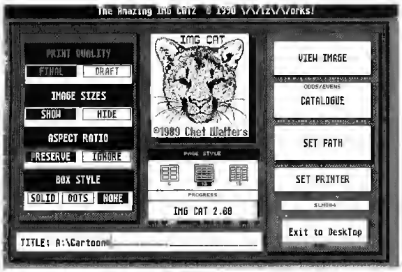


Image Cat

Outline Art

Outline Art is an incredibly powerful program designed to manipulate text and vector graphics through a variety of special effects. It adds flexibility to ST desktop publishing that rivals similar products on the IBM or Macintosh.

To start Outline Art define an area in which to place your text. In the dialog box that appears, type your message, specify a font and decide whether you want the text rotated, curved or traced upon a predefined path. Click on OK and within seconds your design will appear on the screen. It's that simple.

Outline does not include a print option. If you want to see how your work will look you have load your files into Calamus or convert them to Postscript format, which is a waste of time. A print option is mandatory.

Dan Fruchey, October

Outline Art version 1.0, $289.95. ISD Marketing, 2651 John St., Unit 3, Markham, Ontario L3R 2W5 (416)479-1880

PageStream

(*Editor's Note*: Current version is 1.8.) PageStream is characterized by a very flexible and intuitive user interface, great versatility and tremendous power. Unfortunately, the version reviewed (1.52) is also characterized by some bugs and a tendency to bomb for no apparent reason.

During the many hours I evaluated the program, it bombed perhaps six times. There seemed to be no common denominator to the crashes, although all occurred while my Mega 2's blitter chip was on.

PageStream also displayed a few bugs that seemed to pop up whether the blitter was on or not. None of the few other quirks I encountered showed up more than once.

Despite these flaws, I love using PageStream. It is less rigid than other DTP programs available for the ST in that it doesn't require the user to first create frames or blocks to hold all of the various elements used in a document.

PageStream also offers a wide variety of print options, and — thanks to its own page-description language — print quality is outstanding. PageStream even lets documents be saved as PostScript-compatible files.

Scott Wasser, April

PageStream, $199.95. Soft-Logik Publishing Corp.,

Outline Art

11131 S. Towne Square, Suite F, St. Louis, MO 63123 (314)894-8608

People, Places & Things, Education Graphics, Signs & Slogans

Each of these clip-art collections is comprised of bit-mapped image graphics saved in .IMG format. The pictures were saved in medium resolution and as a result they require some manipulation to print properly. Images are saved in groups so you need to cut and paste individual graphic components. The graphics are fairly simple in design: they lack the detail and finesse of some of the other collections but are still quite useable.

Dan Fruchey, March

People, Places & Things, Education Graphics, Symbols & Slogans, $39.95 each. Timeworks Inc., 444 Lake Cook Road, Deerfield, IL 60015 (708)948-9200

DESKTOP VIDEO

JRI Genlock

The JRI Genlock System lets you combine computer-generated images with an external video source such as a VCR or a video camera. What makes this board so special is that it accomplishes the genlocking process entirely through hardware. This means that all your software is automatically compatible with it. Furthermore, when genlocked to an external video signal, the board delivers a broadcast-quality RS170A NTSC signal for the first time on an ST.

JRI's Genlock is perfect for professional video producers, who can now record on high-quality Betacam, 3/4- and 1-inch videotape for results as close to the original as possible.

Wilton A. Vargas P., November

JRI Genlock, $650.00. John Russell Innovations, P.O. Box 5277, Pitsburg, CA 94565 (415)458-9577

TV Titles 2.0

In addition to scroll, TV Titles offers a nice fade, a vertical wipe, a shutter effect like a Venetian blind, a fairly coarse but workable spiral and a confetti-like effect called "Disolve" [sic]. You can elect to leave up the previous image and transition the new image over it or replace the old with the new. Because it's an image-based system, you can't scroll characters onto the screen one at a time.

Overall, I liked TV Titles 2.0. If your needs are modest and you have some other way of generating the text and images you'll use, then go with it. It's reliable and at the price, it's an excellent deal. TV Titles 2.0 is a product of the cottage programming industry and its support system is limited; you have to call the author in eastern Canada for support — and only between the hours of 7 p.m. and 9 p.m.

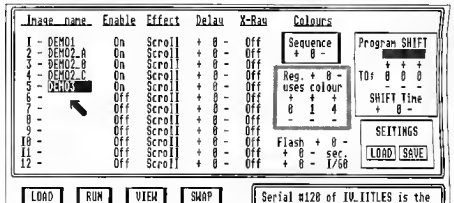
Andrew Reese, November

TV Titles 2.0, $39.00. J.P. Deziel, R.R. 1, Box 6, Chelsea, Quebec J0X 1N0 (819)827-0551

PageStream

Videotext

If you use your ST for graphics that you pipe out to videotape, chances are that you have wished for an easy way to add titles and credits to your productions. Videotext makes adding titles and credits (almost) painless.



TV Titles 2.0

This definitely isn't a program that you're going to master in one quick session. It takes a few hours of work until you understand how to control all the effects available.

There are some troubling aspects to Videotext. It crashed on me several times in ways that I was not able to repeat. There's also a lack of consistency in the use of keys and mouse buttons in Videotext.

Videotext is full of nice features, like automatically starting on a black screen so that you can set up your video equipment and start your recorder. It's designed to work with the JRI Genlock and should produce some rather professional images with it.

Andrew Reese, July

Videotext, $125.00. Water Fountain Software, 13 E. 17th St., 3rd Floor, New York, NY 10003 (212)929-6204

Vidi-ST

Now, instantaneous captures of the fastest-moving subjects are possible on any ST or Mega. Captured shots are dramatically clear and black-and-white pictures are shaded in 16 tones or 16 colors in low resolution.

Vidi-ST is a snap. You can see every frame instantly as it is grabbed, in a flowing on-screen animation. A video camera is not required, since you are able to use any VCR and even some modern television sets as a video source. The included software is quite easy to learn, offering most commands both from drop-down menu bars and ►

Vidi-ST

from mouse-click boxes along the screen bottom. The miniature manual should be read, though, since some of the controls (like the synchronization and the aspect ratio) are very simple, but only if you know what they're for. Most users will be capturing quality video within minutes of opening the box.

John Nagy, May

Vidi-ST, $199.00. Computer Games Plus, Box 6144, Orange, CA 92667 (714)639-8189

EDUCATION

Algebra I

This introduction to algebra presents linear equations to junior high schoolers. It covers theory, gives examples, then asks students to solve algebraic equations and word problems.

Algebra I has five levels of difficulty and teaches using real-world problems such as investments and motion. Its tutoring abilities are its best feature. The program walks students through problems, giving hints and facilitating conceptual understanding. Computer sessions can be printed.

Kerry Whelan, October

Algebra I, $29.95. Micli!ron, 3201 Drummond Plaza, Newark, DE 19711 (302)454-7946

First Letters And Words

First Letters and Words uses voice instructions to guide the young user through its four games. The parent or teacher can control the content and level of difficulty.

Non-readers can learn the alphabet, both upper- and lower-case letters, while beginning readers can learn the names of the parts of a dinosaur's body or puzzle out the answers to an animal riddle game.

Kerry Whelan, October

First Letters and Words, $29.95. First Byte Software, Clauset Center, 3100 S. Harbor Blvd. #150, Santa Ana, CA 92704 (714)432-1740

First Shapes

Mr. Ted E. Bear introduces the preschooler to shapes in this full-featured program from First Byte. The bear talks to your children, asking them to choose activities by pointing to large picture boxes and clicking the mouse. There are four games: a Concentration clone, changing shape sizes, designing toys out of shapes and choosing the right size shape.

Because of its many features, First Shapes is a good value. Best of all, reward messages can be personalized with your child's name.

Kerry Whelan, October

First Shapes, $29.95. First Byte Software, Clauset Center, 3100 S. Harbor Blvd. #150, Santa Ana, CA 92704 (714)432-1740

French Verb Tutor, Spanish Verb Tutor

Beginning linguists can use the first of these programs' four levels to test themselves on regular verb conjugations. The advanced level provides fluent linguists with a reference dictionary of conjugations using all tenses and persons. The programs know conjugation rules for any verb, regular or irregular.

Kerry Whelan, October

French Verb Tutor, Spanish Verb Tutor, $49.95 each. ASDE Inc., 151 rue Jolicoeur, Hull, Quebec J8Z 1C8 (819)770-7681

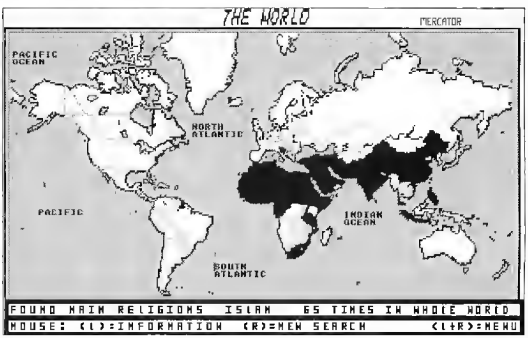
Geography Tutor

Geography Tutor is quite good for what it does and is a solid educational package. The ability to update and modify the database is a strong point, as are the compare and quiz features.

Compared to the quality of maps found in an actual paper atlas, the maps in Geography Tutor are greatly inferior. This, however, is not the author's fault — he's limited by the computer screen resolution. More close-up maps of areas of the world with lots of small countries would have been an improvement. Some of the maps are quite distorted from what I am accustomed to, South America in particular. Also, close-up maps of Asia, Antarctica and Australia must be purchased at extra cost.

Ron Schaefer, November

Geography Tutor, $39.95. ASDE Inc., 151 rue Jolicoeur, Hull, Quebec J8Z 1C8



Geography Tutor

(819)770-7681

Kid's Stuff

Kid's Stuff offers three activities from a picture-style menu: counting, letter recognition and free-style typing. Its charming graphics and gentle pace will appeal to the typical pre-schooler. By counting correctly or typing the correct letters of a word, graphics on the screen come to life. The simple presentation of all three activities suits young children that are just beginning to figure out a keyboard and a mouse. To a limited extent, you can tailor the program to meet individual needs.

Kerry Whelan, October

Kid's Stuff, $39.95, Stone and Associates, 7910 Ivanhoe Ave. #319, La Jolla, CA 92037 (619)459-9173

Linkword — French

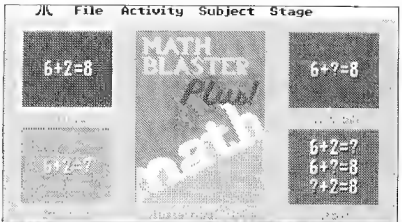
Dr. Michael M. Grunceberg designed this program to help students get a basic grasp of French quickly and easily — which it does very well. An audio disk and printed glossary help with pronunciation. The program covers basic grammar, leading to simple sentence translation.

The Linkword series is visually and phonetically based. For example, once I've imagined Mike Tyson carrying a deer on his shoulders, I'll remember that deer is masculine.

The program works like flash cards, giving students the option of a predefined lag time to visualize the word before it disappears. There is a lot of travel-oriented vocabulary in Linkword, which makes it appealing to the vacationer.

Kerry Whelan, October

Linkword — French, $29.95. Artworx Software Co. Inc., 1844 Penfield Road, Penfield, NY 14526 (716)385-6120



MathBlaster Plus

Magical Math I

In Magical Math 1, part of Atari Corp.'s Bentley Bear Series, a math question must be answered so Bentley can accomplish his task. The number of digits in the operation, type of operation and amount of time allowed to answer the question can be changed.

It would be nice if there were more action on the screen and if input from the numeric pad or keyboard was allowed. But since so few educational programs will run in color and monochrome, it's a great resource for owners of monochrome systems.

Kerry Whelan, October

Magical Math I, $29.95. Atari Corp., 1196 Borregas Ave., Sunnyvale, CA 94086 (408)745-2000

MathBlaster Plus

Updated for the ST in 1989, MathBlaster Plus introduces kids to basic math facts. The program is nothing fan- ►

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WINTER 86

Features: Jack Tramiel Interview, Buyer's Guide.
On Disk: Noise Doodling; Address Book; Auto Dialer; Label Printer;St; Writer Secrets.
Reviewed: Mark Williams C. ; Menu+.

SUMMER 87

On Disk: The aSTronomer: Text Compression and Huffman Coding with Personal Pascal: Flicker Animation Program; MIDISAVE.
Reviewed: Word Writer ST; Data Manager ST; Swiftcalc ST; Five BASICs compared.

SPECIAL ISSUE #2

Features: Drawing and Painting Programs Overview Desktop Video; How to Set Up Your own MIDI Studio; Rock' n' Roll with Atari; Shopping List of Music Hardware.
On Disk: The Cartoonist; MIDI View; Ear Trainer.
Reviewed: Synth-Droid; Xsyn Patch Editors; Music Studio and Music Construction Set.

SPRING 88

Features: Earthquake; Upgrading Your ST; Dave Mason Interview.
On Disk: Home Budgeting; Exploring Prolog; 1987 Tax Template; Battle for the Throne.
Reviewed: Personal Finance Programs; Desk Accessories Compared.

SPECIAL ISSUE #3

Features: The ABCs of Desktop Publishing; The ST in Business; Business Graphics; Database Overview.
On Disk: Card# STack Database; START Selector; Play the Market.
Reviewed: WordPerfect; F-15 Strike Eagle.

SUMMER 88

Features: Three Years with the ST; Mick Fleetwood Interview.
On Disk: Planning Traveler; Writing Your Own Help Files; Fractal Landscape Generator; Klondike Solitaire.
Reviewed: Microsoft Write.

SPECIAL ISSUE #4

Features: Games and Entertainment
On Disk: Naval Battle; World Discovery; Guitar Simulator; Byte Mechanic, ReSTART.
Reviewed: Dungeon Master; Chessbase; Four Sonic Flight Patch Editors; Quantum Paint 1.2.

OCTOBER 88

Features: Programming Under Pressure.
On Disk: Vocabularian; Brickworks; ST Microscope.
Reviewed: Desktop Publisher ST; SMPTE Track; Softsynth; C Language Overview.

NOVEMBER 88

Features: The ST and MIDI.
On Disk: AVS; Sciplot; Appointment Calender.
Reviewed: LDW Power; MIDI Power; Superbase Professional.

DECEMBER 88

Features: Hardware
On Disk: Wombats II; Santa BBS; Discovery Construction Set; Five Sort Routines.
Reviewed: Moniterm's Viking Monitor; DynaCaDD; Five Hard Drives Compared; Ricoh PC Laser 6000.

JANUARY 89

Features: Editor's Choice.
On Disk: GFA BASIC 2.0; Spanish Mastery, STARTKey Revisited; Slither.
Reviewed: GFA BASIC 3.0; Creator and Notator.

FEBRUARY 89

Features: Thanks for all the Fish; ST: 1999.
On Disk: Dah-Ditter; Moon Calendar; Kamikazee Chess, Killer Chess; VCR Organizer.
Reviewed: Atari's Planetarium; Robtek's Skyplot; Mirage Sample Editor's.

MARCH 89

Features: Three Artists Who Use the ST; Software Rental.
On Disk: Seurat Draw and Paint Program; Assembled Saucers; ST Coloring Book.
Reviewed: Graphics and Animation Programs Compared; Digigram's Big Band; Overview of Six CAD Programs.

APRIL 89

Features: Jimmy Hotz's MIDI Magic; Dr. T Inteview; The New TOS ROM Error Codes.
On Disk: ST Writer Elite 3.0; Poker Solitaire; RAM Baby.
Reviewed: Utilities; R/C Aerochopper; MIDI Draw.

MAY 89

Features: CompuServe's Sports Forum; Atari Goes to College.
On Disk: Space Wars 2400; GFA Object; 1988 Tax Template; SIFT (START's Instant File Tranlator
Reviewed: Buyer's Guide to Telecommunications Programs; Calamus.

JUNE 89

Features: Do Anything Business Computer; Arcade Addiction.
On Disk: GFA Vector, Match Quiz St; Screenwriting with WordPerfect; ST Pinochle; Exploring Spreadsheets; Traveling Mattes.
Reviewed: Juggler II; Switch/Back; Revolver; Graphics Tool from Migraph; MIDI Drummer.

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JULY 89

Features: MIDI in the Future Tense; Making MIDI Affordable
On Disk: Babel; GFA Dbject; The ST Theremin; START Arcade
Reviewed: Sound Digitizers; EZ-Score Plus; Pagestream; Turbo ST1.4; Hi Soft BASIC and Hi Soft BASIC Professional.

AUGUST 89

Features: Secrets of a Good User Interface; Tools of the Trade
On Disk: POGO; File Search; Splines on Splines; Stumbling Blocks
Reviewed: Ultrascript; DevpaCST; dBMAN V; After-Market Floppy Disk Drives; MIDI Magic

SEPTEMBER 89

Features: Sam Tramiel Interview; Computer Game Violence
On Disk: Avecta I: Ebora; The Seven Skulls; Newspeed; Slither Screen Editor; Cinko
Reviewed: Eight Games; Fleet Street Publisher 3.0; STAC, STOS and TaleSpin; NewScore

OCTOBER 89

Features: STACY and Portfolio Preview
On Disk: CAD-3D-to-DynaCADD Converter; Schedule Maker; ST Softguide; WordPerfect Macros; Boingo
Reviewed: DynaCADD 1.56; Hotwire, NeoDesk 2.0 and VDOS ProQueue; Entry-Level Sequencers; Computer Guide to the Solar System

NOVEMBER 89

Features: The Transputer Connection; Atari and Perihelion; Donny Osmond Interview; The START Disk's New Look
On Disk: RezRender; JULIA; Final Approach Controller

DECEMBER 89

Features: The Future of Atari Computing; A Small Tour of UNIX, Pt. I; Elmtech's ParSec Graphic Interface
On Disk: GFA Companion; Attack!; Word Puzzle
Reviewed: Accelerator Boards; Beat Box; Mice

JANUARY 90

Features: A Small Tour of UNIX, Pt. II; CD-ROM; Battle of Britain
On Disk: CAD-3D tp DXF Conversion; Mystic Realm; Laserdise Remote Control; Score ST
Reviewed: Supercharger & Spectre GCR; Diamond Back & Hard Drive Turbo Kit; ST Pictascan; BetaCad

FEBRUARY 90

Features; A Small Tour of UNIX, pt. III; TT-/TOS Secrets
Dn Disk: Chaos on your ST; Crunch Time Football; X-10 Controller; AI Doctor
Reviewed: Finex V; Final Cut; The Cuckoo's Egg

MARCH 90

Features: Robert Williams Interview; A Small Tour of UNIX, Pt. 1V
Dn Disk: CAD-3D 1.0 Mountain Solitaire; Spinwheel
Reviewed; Clip-Art Overview; Rmovable Hard Disks; BeckerCAD

APRIL 90

Feature; Word Processorr Comparison; PHA$AR Tips
On Disk: ST Writer Elite 3.6 PHA$AR 3.0;89 Tax Templates; Super Jackpot Slots
Reviewed: Desktop Publishers Overview: PC Speed

MAY 90

Features: Telecommunications; Sound Designer Scott Gershin Interview
On Disk: InfoBase ST; ST; Styzor's Contest; Computer Viruses
Reviewed: Critical Path; Dr. T's T-BASIC; VIDIST; WordUp 2.0; FAST Tape Backup; Prolext

JUNE 90

Features: Alexey Pazhitnoz Interview: Wayne Gretzky Hockey; Sexist Software Perpective
On Disk: Bugs!; Crossword Creator; Wordle; Warrior STI Fun Pages
Reviewed: For the Fun of It (11 Games); WORDFLAIR

JULY 90

Features: Midi Pros Go ST; Multitasking on the ST; Computer Hazards
Dn disk: Alter Tune; Midi Master Drummer; Midi Programming Tips; Sampsyn
Reviewed: PC-Ditto II; Videotext; For the Fun of It

AUGUST 90

Features: Playing the Developer's Game; Blitter Basics
Dn Disk: CardMaster; Metamorph; SBLIT
Reviewed. Deskset II; Cubase; For the Fun of It; DC Utilities

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cy, but with its solid drill and practice functions, MathBlaster Plus could be found in any elementary school's computer lab. The manual for the program is detailed and clearly explains the five options available. With its editor, parents can design and print test papers. MathBlaster Plus includes a record-keeping function for teachers.

Kerry Whelan, October

MathBlaster Plus, $29.95. Davidson and Associates, 3135 Kashiwa St., Torrance, CA 90503 (800)556-6141

Math Talk

Professor Matt A. Matics leads his students through both drills and games in Math Talk.

The game Table Talk presents your child with addition, subtraction, multiplication and division questions. In Mystery Number, he or she has to figure out the missing numbers in math problems. Parents and teachers can customize the drills, print questions and record the results. Children who do well in math may lose patience with Math Talk's slow response time.

Kerry Whelan, October

Math Talk, $29.95. First Byte Software, Clauset Center, 3100 S. Harbor Blvd. #150, Santa Ana, CA 92704 (714)432-1740

Math Wizard

The imaginative graphics and liberal use of color make Math Wizard appealing to children and adults. Wizards, dragons, trolls and elves help players through four different drills disguised as games.

A warning to parents: dramatic sound effects follow both right and wrong answers. Children may enjoy making mistakes as much as they like getting the answers right! To prevent any problems, children may need some supervision when playing.

Kerry Whelan, October

Math Wizard, $39.95. Unicorn Software, 2950 E. Flamingo Road, Las Vegas, NV 89121 (702)737-8862

Read-A-Rama

Read-A-Rama teaches word recognition and spelling skills, using a colorful circus theme. Parents can customize the word lists.

First the child is presented with a picture and word (there are six different pictures in a number of different categories). To test reading, a memory game asks kids to find the objects from different categories. The child can be asked to type the name of the picture in the spaces provided.

Kerry Whelan, October

Read-A-Rama, $49.95. Unicorn Software, 2950 E. Flamingo Road, Las Vegas, NV 89121 (702)737-8862

Space Math

Space Math is an adaptation of the popular arcade game Lunar Lander. Players must answer math questions in order to safely land a space ship on the moon. Black holes, meteors and the effects of gravity are combined with math equations so the higher levels are a real challenge; by Level 8 players had better know their math!

Kerry Whelan, October

Space Math, $14.95. Intracorp Inc., 14160 SW 139th Court, Miami, FL 33186 (305)252-9040

Batman, The Movie

EMULATION

PC Speed

At the current time, the only hardware PC emulator that works to my satisfaction is MichTron's PC Speed. It is fast, compatible, handles hard drives and is available now. The incomplete manual notwithstanding, this emulator works and works well. Soldering is required for installation.

David Plotkin, April

PC Speed, $199.95. Talon Technologies. 243 N. Highway 101 #11, Solana Beach, CA 92075 (619)792-6511

Spectre GCR

(*Editor's Note*: Current version is 3.0) Spectre GCR's emulation isn't perfect: there are some programs that won't run or that crash when you attempt to use certain features. However, most Mac software that "followed the rules" runs very well on Spectre. And with each version of the Spectre software, more programs run correctly.

Spectre GCR is a very large cartridge, the largest I've seen. The cartridge supposedly works best when it is at the end of the drive chain, although I have had no problem with it being in the middle.

If you're serious about running Mac software on your ST, this is for you.

David Plotkin, January

Spectre GCR, $299.95. Gadgets by Small Inc., 40 W. Littleton Blvd. #210, Littleton, CO 80120 (303)791-6098

SuperCharger

The important questions about SuperCharger are: does it work and is it fast? The answer to both is yes. It works, running all the PC software I tried. The SuperCharger is also fast — it ran PC programs such as Lotus 1-2-3 and Microsoft Word quickly. Graphics-based software was very fast, although the text software had a somewhat slower screen-update speed.

Provided that Talon can handle the DMA chain problem with SuperCharger, this is a product that can change your ST from a friendly, powerful computer to an unfriendly, powerful computer; a PC!

David Plotkin, January

SuperCharger, $450.00. Talon Technologies. 243 N. Highway 101 #11, Solana Beach, CA 92075 (619)792-6511

GAMES

Archipelagos

In the far future, Earth has been poisoned and it's up to you to purify the land.

Archipelagos' vivid and weird graphics capture the spirit of the game. The eerie landscape is a simple, clashing checkerboard of poisonous reds and bright greens set against a grey sky

and crystal blue water, inhabited by twisted creatures drawn in creepy detail. Full of strange reverberations and eerie melodies, the sound also helps create an appropriate, ominous mood.

Overall, Archipelagos is one of the most original games I've seen, both in gameplay and in overall concept. Despite it's seek-and-destroy nature this is no shoot-em-up, but rather a futuristic fantasy strategy game.

Carolyn Cushman, January

Archipelagos, $39.95. Britannica Software, 345 Fourth St., San Francisco, CA 94107 (415)546-1866

Artura

Basically, Artura is a hack-and-slash game. There isn't much to this game, but you do have more challenges than chopping up barbarians and giant rats. Hidden somewhere along the way are the pieces to the sacred Runestones. When they're used separately or in combinations, they give you the power to use the wheel of Cerriddwen, which helps you on your quest to rescue Nimue.

Artura could be better in many ways. It's not too exciting in the way of play and it resembles at least a dozen other platform-style games on the market. But, the challenge of finding the Runestone did add some depth and gave me incentive to dig deeper.

Greg Perez, June

Artura, $14.99. Virgin Mastertronic, 18001 Cowan St., Suite A, Irvine, CA 92714 (714)833-8710

Batman, The Movie

Data East and Ocean have done an excellent job bringing the excitement of the Batman film to the ST.

The various sequences are all very enjoyable and well done. The Batmobile sequence (which uses a Pole Position-style perspective) is as good as many stand-alone driving games on the market. The graphics throughout the game are great and there are some nice still shots shown before each sequence.

The only weak point in Batman is the sound. You can choose between music (which didn't remind me much of the film's music) or sound effects (which are pretty standard stuff). Some digitized effects from the movie would have been a nice touch.

Clinton Smith, October

Batman, The Movie, $39.95. Data East, 1850 Little Orchard St., San Jose, CA 95125 (408)286-7074

Blockout

Just when you thought you had finally mastered Tetris, along comes Blockout from California Dreams. Like Tetris, the idea of Blockout is to fill an empty rectangular column with falling blocks. The difference is dimension; the Blockout screen is in 3D.

To further challenge you, the dimensions of the pit can change. You can select Custom Pit Dimensions and Rotation Speed for the blocks themselves. The ability to set up configurations makes Blockout endlessly challenging.

The graphics are sharp and the game has a bouncy sound track. You'll find yourself coming back again ►

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GAMES	
876 Fuzzball /Q*BERT clone (CJ)	NEW!
883 G-Empires/spacewar strategy (C)	NEW!
139 Grand Prix 2, car racing (C)	
860 Go Up!Lode Runner clone (M)	
884 Hollywood Squares TV show (C)	NEW!
142 HRS: Adult graphic adventure (1CD)	
143 Love's Fiery Rapture adventure	
895 Mini-Golf & Shanghai clone (M)	NEW!
859 Mystic Mirror/2 player Dung. Master (C)	
139 Nude shoot 'em up (1C)	
133 Nude strategy games (C)	
124 Risk/Telris clones (M)	
877 Robotz/Robotron clone (CJ)	NEW!
885 Seawar/2-4 player sea battle (C)	NEW!
880 Sorry!/Excellent board game (C)	NEW!
155 Strip Breakout (C)	
881 Stu's Pool w/ digitized sound (C)	NEW!
879 TADS/Best adventure maker (D)	NEW!
878 Wellths clone & Tetraxle (C)	NEW!
SCENARIOS/PROGRAM DATA	
831 100's of DC Desktop icons	NEW!
888 Cheats/hints for 100's of games!	NEW!
896 91 Chaos Strikes Back heroes	NEW!
SOUND/MIDI	
904 Cash 16 voice Sequencer	NEW!
843 MIDI Music Maker 1.81	NEW!
903 Simpsons digit. sound/animation	NEW!

UTILITIES	
842 Alan PORTFOLIO utilities	NEW!
625 B/STAT 2 36 statistics (1D)	
626 Blitz Copier 2.5,make your own	
803 Cheetah super fast file copier 3.0	NEW!
674 Color monitor emulator for mono	NEW!
804 Dcopy 3.6/LG file selector 1.8A	NEW!
638 Gemini 1.18/NeoDesk clone (TD)	NEW!
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815 Packer/squish programs & run	NEW!
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897 The best Hard Disk backup/utils.	NEW!
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SPECTRE 128/GCR ... You saw it here first!	
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and again.
David Plotkin, August

Blockout, $39.95. California Dreams, 130 Knowles Drive, Los Gatos, CA 95030 (408)378-0340

Blue Angels

The U.S. Navy's Blue Angels are noted the world over as one of the best of the best when it comes to formation and single aircraft acrobatic flying. Accolade offers an excellent simulation of that and more in the program Blue Angels: Formation Flight Simulation.

The main attractions are the F/A-18 Hornet and the Blue Angels' airshow flight routines.

After practicing in the simulator, put your skills on the line. Go for it. This is where the real thrill is. You'll be surprised how good it feels to make the pilot's list.
Wolf Griffey, December

Blue Angels, $49.95. Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128 (800)245-7744

Chaos Strikes Back

The packaging for Chaos Strikes Back claims that Dungeon Master is required to run the program. This is not strictly true; you do not need your original Dungeon Master disk to play the game. However, Chaos Strikes Back is impossible to play if you don't know how to play Dungeon Master. Not only is there nothing in the manual telling you how to control your characters and move around, but to survive in Chaos Strikes Back you have to have gotten far enough in Dungeon Master to learn how to cast important spells and fight monsters.

START's editors have intermittently discussed using a rating system for game reviews. Such a system could use Siskell & Ebert-style "thumbs up" or "thumbs down"; or a small graphic showing a little man in a chair sleeping, applauding or cheering; or a standard one- to four-star rating. So to give you an idea of what to expect from this long-awaited sequel, I offer this objective assessment of Chaos Strikes Back: two thumbs — being bitten off. A little man — fleeing for his life. Four stars — all shooting fireballs at you. Heidi says, check it out.
Heidi Brumbaugh, June

Chaos Strikes Back

Chaos Strikes Back. $39.95. FTL Games, 6160 Lusk Blvd., Suite C206, San Diego, CA 92121 (619)453-5711

Clue Master Detective

In glancing over the notes I have been honored to gather during the course of my long relationship with Sherlock Holmes, I am struck by those pertaining to the murderous affair at Boddy Manor.

Holmes had been contacted the previous week by a gentleman with the unusual name of Virgin Mastertronic, who claimed to have made significant improvements to Charles Babbage's calculating machine, which he called a computer. In order to publicize his efforts, he proposed to test his invention's logical skills against those of the world's only consulting detective.

Alas, Mr. Mastertronic's invention was no match for Holmes' remarkable mental qualities. My friend had whispered the solution to me a full two turns before the machine deduced the murderer.

"So, Mr. Holmes, what do you think of our experiment?" the Parker brothers asked him as we begged our leave.

"An absorbing enough amusement for amateurs," he said, "but finely honed intellects like mine prefer a real chase that pits one human mind against another."
Dr. John Watson, June

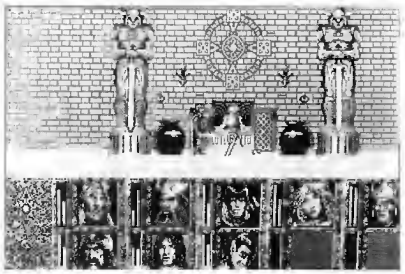
Clue Master Detective, $39.99. Virgin Mastertronic, 18001 Cowan St., Suite A, Irvine, CA 92714 (714)833-8710

Day Of The Viper

Take one part classic maze-chase game (Pac Man will do); add two parts Dungeon Master; sprinkle with a modified dash of Tower Toppler; throw in a cup of hot, hip, happenin' shoot-em-up; sift in a bit of a moderately trite, but very atmospheric SF plot; top it all off with the very best features from the latest batch of action-adventure games; bake at the hottest action level and what have you got? Day of the Viper, the newest release from Accolade and probably one of their best to date.

The programmers have done just about everything right. Everything, from the look and feel of the buttons on your console to the interface, have been implemented exquisitely.
Matt Laurence, November

Day of the Viper, $49.95. Accolade Software, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128 (800)245-7744


Dragons Of Flame

Dragons Of Flame

A sequel to Heroes of the Lance, Dragons of Flame is Strategic Simulations' second attempt to translate the wildly popular Dungeons & Dragons Dragonlance module to a computer role-playing game. The result is more of an arcade hack-and-slash with fantasy elements than

an intricate role-playing adventure.

As you progress in the game, you discover better weapons, potions and treasures, but other than looking for hidden doors and traps, there are no intricate puzzles to solve. The interaction with the creatures you encounter is pretty much limited to combat, although you run into townspeople who offer you clues and join your party.

The Dragons of Flame characters don't grow with experience and their attributes remain fixed, which leads me to my biggest problem with the game: It lacks the feeling of absolute control over an entire party of real characters, a hallmark of any good role-playing game.

Harvey Bernstein, May

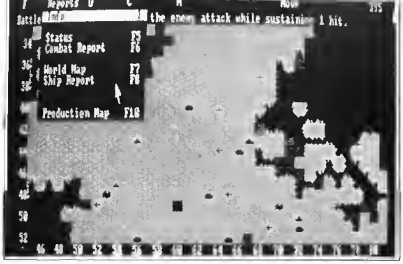
Dragons of Flame, $14.95. Strategic Simulations Inc., 675 Almanor Ave., Sunnyvale, CA 94086 (408)737-6800

Empire

Empire, by Interstel Software, is an elaborate strategy game in which you try to spread your superior military forces over the world and thereby conquer it.

Since the size of the playing board is tremendous, a game can last several days, with fleets growing to contain hundreds of armies, fighters and ships. Fortunately, the program's excellent interface makes managing your forces practical.

I recommend Empire to anyone who prefers strategy games to arcade shoot-em-ups or games of chance. In this game, everyone begins with the same resources. Winning depends upon tactical skills, clear thinking and organization — not to mention knowing thy enemy.



Empire

Heidi Brumbaugh, June

Empire, $49.95. Interstel Corp., 17317 El Camino Real, Houston, TX 77058 (713)486-4163

Eye Of Horus

Eye of Horus is a classy game. The characters, story and hieroglyphs are based on authentic Egyptian mythology. The music is very atmospheric, lending to the feel of the game, and the graphics are attractive and occasionally amusing.

It is also a long game, however, and there is no save-game feature (though there is a pause key). In addition, it is very easy to die without accomplishing much — don't expect to get very far in your first few games; the evil guys are sneaky until you know where to look for them and the amulets don't look much like the pictures in the manual.

Matt Laurence, November

Eye of Horus, $39.95. Britannica Software, 345 Fourth St., San Francisco, CA 94107 (415)546-1866

Falcon Mission Disk - Operation: Counterstrike

I soon discovered that my orders for Operation: Counterstrike were no picnic. These 12 jobs were linked. I could come back sometimes after a tough mission, only to find more of those tanks trying to tear up my runway. No more single-strike flights.

Fortunately, both aircraft systems and flight controls had been upgraded. But, as always, bad came with the good. My opponents were flying MiG-29A Fulcrums. Head to head we were about even.

After the mission I told my C.O. a few things. I definitely like the improve- ►

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ments in systems and handling. The autoview alone is worth the new price tag. Absolutely, the new terrain and targets are a challenge I wouldn't miss trying.

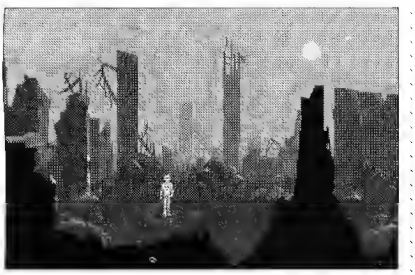
Wolf Griffey, February

Falcon Mission Disk - Operation: Counterstrike, $24.95. Spectrum Holobyte, 2061 Challenger Drive, Alameda, CA 94501 (415)522-3584

Future Wars

Future Wars begins with you washing windows, working "at what, believe it or not, is your full-time job." From this ignoble beginning you will travel thousands of years through time and circle the planet to save the Earth from alien invaders in this immensely enjoyable graphics adventure.

The emphasis in the last sentence should be on the word "graphics." This is the one area where the game easily outshines its adventuring competitors.



Future Wars

The thing most likely to annoy more seasoned adventurers is the immaturity of the puzzles, the sort of things that anyone can see are obviously puzzles: Why is there a monk's habit hanging on a tree branch? Why is there a rope lying in the forest?

Despite this minor point, Future Wars is a lot of fun.

Greg Knauss, December

Future Wars, $49.95. Interplay Productions, 3710 S. Susan St., Suite 100, Santa Ana, CA 92704 (714)549-2411

Hillsfar

Hillsfar is an adventure role-playing game that sports pretty good graphics, but is somewhat short on plot and long on frustrating "arcade" sequences.

The actual reason for you being in Hillsfar is never made clear. There's a vague reference to a despot and a merchant named Maalthir, but nothing definite: no royalty to rescue, no dragon to slay. The biggest challenge is trying to figure out what buildings are safe to enter and which ones put you into a mad race to escape the guards.

Within Hillsfar, you can recruit assistants, try to coax or buy information from the citizenry, practice your archery at the range and generally try to figure out why you are spending so much time playing this game.

David Plotkin, March

Hillsfar, $49.95. Strategic Simulations Inc., 675 Almanor Ave., Sunnyvale, CA 94086 (408)737-6800

Indiana Jones And The Last Crusade: The Action Game

Whoever designed Indiana Jones and the Last Crusade: The Action Game had to be, well, a sadist. I was hours and hours into gameplay and still hadn't made it through the first level. It would take another two weeks of sleepless nights before I'd finish the game. What were they trying to do to me?

Yet as I struggled through each level, died innumerable deaths and alternately cursed and praised the programmers, I realized that I wasn't just playfully addicted to Indy, I was obsessed.

If you're wondering how the game compares to the movie, I'll tell you: the movie's better, but that's mainly because it's shorter.

Tom Byron, February

Indiana Jones And The Last Crusade: The Action Game, $39.95. Lucasfilm Games, P.O. Box 10307, San Rafael, CA 94912 (415)721- 3300

Indiana Jones and the Last Crusade: The Graphic Adventure

Creating a graphic adventure based on a film is a tricky business. If you follow the plot too closely it won't be very fun or challenging for people who saw the movie. On the other hand, if the game has few or no ties to the picture, fans will be disappointed. With Indy: The Graphic Adventure Lucasfilm walks the tightrope perfectly.

One of the best features of Indy is that there are multiple solutions to many of the puzzles and you don't have to do things exactly the same way that they happened in the film. Another nice touch: While you can try to fight your way out of a confrontation, you can also choose to try to talk your way out by selecting a response from a group of onscreen choices.

Clinton Smith, October

Indiana Jones and the Last Crusade: The Graphic Adventure, $49.95. Lucasfilm Games, P.O. Box 10307, San Rafael, CA 94912 (415)721-3300

Maniac Mansion

Just as there are cult movies, so too are there cult games. One of those is Lucasfilm Games' Maniac Mansion, a crazy and funny adventure game filled with monsters and madness.

This is a game that's fun to play with three of your friends (or kids) hanging over your shoulder, telling you what to try next. Just be sure that you save the game often, as there's no telling when one of your team will meet an untimely demise — like just going to the kitchen for a snack!

If you like graphic adventure games, you'll want Maniac Mansion. Absolutely. It's not only a cult classic, but a fun way to spend (quite) a few hours.

Andrew Reese, April

Maniac Mansion, $49.95. Lucasfilm Games, P.O. Box 10307, San Rafael, CA 94912 (415)721-3300

Pipe Dream

Pipe Dream pits you against one of the most horrifying opponents imaginable — sewer sludge, or in this case, the dreaded flooz. As plumber in charge, you must pipe this gunk away as it flows from its source. You've got a well-filled pipe rack, with a variety of shapes (elbows, straights and cross pieces) to place

on the gridded playing field. Unfortunately, you can only take the bottom piece in your dispenser.

Overall, I found the game addictive enough to keep me returning time and again to try for a higher score or a higher level. If not for its excessive cuteness and minor glitches, I'd rate this as a classic strategy game, right up there with Qix and Tetris.

Carolyn Cushman, August

Pipe Dream, $29.95. Lucasfilm Games, P.O. Box 10307, San Rafael, CA 94912 (415)721-3300

Pirates!

For anyone with fire in their souls and sharpened steel at their sides, 17th-century life as a pirate on the Spanish Main must have been glorious. ST owners can now get a taste of that glory, thanks to an award-winning program that is as special as the swashbuckling era it recreates.

Pirates! can't really be classified in any one software category, because it deftly blends the best elements of role-playing, arcade action, strategy and simulations into an engrossing adventure.

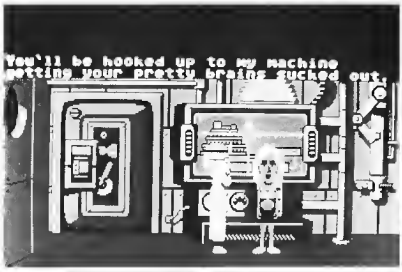
During the course of playing Pirates!, you'll have to trade with merchants, negotiate with politicians and scoundrels, sail and navigate the Caribbean, search for buried treasure, plunder towns and fight battles using cannons, swords and muskets. The drawings are rich in character and detail, although animation is a bit choppy and not overly impressive.

Scott Wasser, July

Pirates!, $44.95. MicroProse, 180 Lakefront Drive, Hunt Valley, MD 21030 (301)771-1151

Populous

The classic role-playing game lets a player assume a different persona to fight evil or find a hidden treasure. But the ultimate role to be played has to be that of a god. And Populous lets you take just that role.



Maniac Mansion

There is only one goal in Populous: to defeat your rival god. As you move about the landscape creating lands for your followers and disrupting your rival's civilization, you'll see your opponent trying to do the same to you. When your population reaches a peak, you can call for the ultimate battle, Armageddon.

Populous is a fascinating, fun and challenging game. It's unlike any other computer game I've ever seen. Don't miss it, unless you're a dyed-in-the-wool arcade gamer who has no time for strategy.

Andrew Reese, January

Populous, $49.95. 1st Stop Computer Systems, P.O. Box 20038, Dayton, OH 45420 (800)252-2787

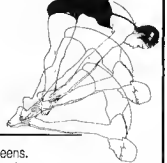
Powerdrome

Take the thrills of today's Grand Prix racing and high-speed jet piloting, integrate them with the excitement of future automotive technology and you've got Powerdrome, probably the hottest and the most imaginative racing simulation available for the ST. Just watching this game being played will send tingles down your spine.

To be totally honest, the graphics in Powerdrome are awesome! They truly have to be experienced to be appreciated. Sometimes I find myself unconsciously bobbing and weaving my head to avoid getting beaned by a low overhang that the racecar narrowly clears on the screen. Powerdrome pushes you and your ST to ►

Silhouette Graphics Auto-Tracing for the Atari ST

NEW



- Load, modify or create raster graphics images and auto-trace them into GEM vector graphics.
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- Drawing features include polygons, stars(3-99 pts./sides), parabolas, bspline smoothing.
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- At least 1 Mbyte required. Works in Hi Rez and big screen monitors. Math Coprocessors supported.

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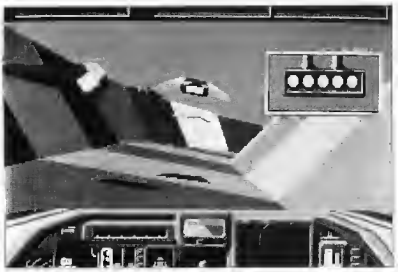


Powerdrome

the limit.

Greg Perez, May

Powerdrome, $39.95. Micrologic, 4949 Marshall Road, Kettering, OH 45429 (800)255-5835

Project Neptune

As Agent Rip Steel, you must destroy the undersea bases of the Yellow Shadow, who is mining uranium to sell to countries which would probably not make peaceful use of it. So begins Epyx's Project Neptune, a game which effectively combines strategy and action into a playable contest.

Project Neptune is lots of fun. Its arcade sequences are extremely well done, yet it is heavy with the need to make strategic choices.

There are a few minor bugs with Project Neptune, and often in the heat of battle you end up in the wrong operating mode. The ending is anticlimactic, but you'll see what I mean when (if?) you get there.

Despite the minor complaints, Project Neptune is a rollicking good time.

David Plotkin, February

Project Neptune, $34.95. Epyx, 600 Alleron Drive, Redwood City, CA 94063 (415)368-3200

Quest For Glory

Quest For Glory, originally released by Sierra On-Line as Hero's Quest, seamlessly and entertainingly meshes the character development and skill building of role-playing games with the problem-solving framework of the traditional adventure. This is one of those rare games that has replay value upon completion.

As has been the case with Sierra's previous releases, the graphics are excellent, particularly the animated characters you meet along the way. Conversation with other characters is much more important in this game than previous titles; there is a pretty convoluted plot to unravel.

Aside from some minor quibbles, Quest For Glory is highly recommended. The humor, storyline and replay value make this a classic.

Harvey Bernstein, December

Quest for Glory, $59.95. Sierra On-Line, P.O. Box 485, Coarsegold, CA 93614 (800)326-6654

Red Storm Rising

The manual is a veritable arsenal of information; it is, in fact, your best weapon. It consists of Operations, Captain's and Reference Manuals.

There are four Challenge levels. Introductory is recommended for the first few games. Normal is best for the casual players. Serious sees the enemy as up-to-speed, so you better be as well. The screen says it all for the Ultimate level: "Life can be brutal and short." On any level, however, Red Storm Rising is great strategic fun. Even if it is one of the last, it will rate as one of the best.

Wolf Griffey, June

Red Storm Rising, $44.95. MicroProse, 180 Lakefront Drive, Hunt Valley, MD 21030 (301)771-1151

Red Storm Rising

Rick Davis' World Trophy Soccer

Based on the name alone, I had great expectations of Rick Davis' World Class Soccer. But unfortunately, it turns out to be more B class than World Class. As a parcd down — almost arcade style — game, it's fine, hut as a true sports simulation, it's too limited.

The game is somewhat redeemed, however, by its simplicity. It's pleasant enough as an afternoon diversion. You can play it without the manual. But you don't need docs for pinball either. If you're looking for some serious sport, better get your ball and head outside.

Scott Wasser, June

Rick Davis' World Trophy Soccer, $39.99. Virgin Mastertronic, 18001 Cowan St., Suite A, Irvine, CA 92714 (714)833-8710

Risk

Perhaps you, like myself, have fond memories of the Parker Brothers board game Risk. For those not familiar with it, simply put, each player starts out with armies stationed in countries around the world, then everyone tries to wipe out every other player's armies and conquer Earth.

This computer version is as good as the original board game. The interface is easy to learn and easy to use, but playing against another person means swapping seats in front of the computer. On the other hand, if the computer is your opponent, it's almost ludicrously simple to out-strategize it since it always chooses Australia to defend.

Wolf Griffey, December

Risk, $39.99. Virgin Mastertronic, 18001 Cowan St., Suite A, Irvine, CA 92714 (714)833-8710

Robocop

It doesn't take long to figure out what Data East's Rohocop is all about — just plug in a joystick, boot the game and start blasting away. That's all there is to it: no reading people their rights, no following "due

course of the law."

Which is not to say that Robocop is a bad game. It certainly looks good, although the animated figures could be a little larger. There are nine levels and each one presents you with a different way to obliterate the opposition. Make sure you have a good joystick on hand — movement can be a little haphazard, especially when jumping.

Dave Gregg, June

Robocop, $39.95. Data East, 1850 Little Orchard St., San Jose, CA 95126 (408)286-7074

Shufflepuck Cafe

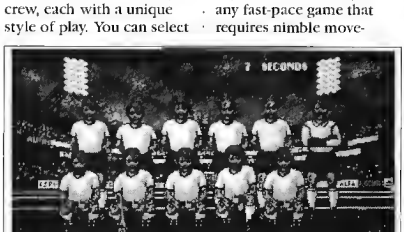
Shufflepuck Cafe is a fast-action game reminiscent of air hockey. It's fun to play, and as with most games of this type, adds some features that can't be found in the real-world counterpart.

Your opponents in Shufflepuck Cafe are a motley crew, each with a unique style of play. You can select your opponent from the opening screen, or use the practice droid.

Shufflepuck Cafe has fast action so expect to feel it in your mouse-hand muscles after you play it for awhile. It's exciting and fun, with good graphics and sound. If you like air hockey, or any fast-pace game that requires nimble movement, check out this game.

David Plotkin, July

Shufflepuck Cafe, $39.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903 (415)492-3200



Rick Davis' World Trophy Soccer

Space Ace

Based on one of the most visually stunning coin-op arcade games of all time, this sci-fi follow-up to Dragon's Lair makes beautiful use of the ST's incredible 16-bit audio-visual capabilities.

While attempting to stop the evil Borf's plans of global conquest, Ace's sidekick, Kimberly, has been captured. Ace must make his way through Borf's evil traps so he can rescue her and put an end to Borf.

Space Ace features gorgeous background scenes and incredible, smoothly-animated characters cavorting within them. This is the best animation I've ever seen on the ST.

Unfortunately, many scenes from the arcade have been left out. The coin-op also featured multiple paths through the game so you could choose to go one way ►

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The screen shot on the right shows a typical ST desktop with Quick ST's desktop background feature installed. Supports .PI2 and .PI3 DEGAS pictures.

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or another, and experience different storylines. To ease the flow of the home version (and lessen disk swapping), there is only one path through the game.

Clinton Smith, October

Space Ace, $59.95. ReadySoft Inc., 30 Wertheim Court, Unit 2, Richmond Hill, Ontario L4B 1B9 (416)731-4175

Space Quest III

Space Quest III: The Pirates of Pestulon is a playable, novice adventure particularly suitable for people getting their first taste of adventure gaming.

The graphics and animation are excellent. As you guide the hero, Roger Wilco, around the screen, he has a shadow in the lighted parts, and gets smaller if you move him towards the back of the room. The price you pay for all this is that each new room must be loaded from disk, an interminable process if you're using floppy disks.

All of the Space Quest series have had a touch of

Space Ace

silliness, but Space Quest III is the most outrageous of them all. Everywhere you turn, there's off-the-wall humor. The Starship Enterprise makes an appearance, and Roger even does an imitation of the Honeymooners' Ralph Kramden.

David Plotkin, January

Space Quest III, $59.95. Sierra On-Line, P.O. Box 485, Coarsegold, CA 93614 (800)326-6654

Star Command

There are basically only two things that can happen in Star Command: communicating and fighting. Your encounters with other ships and beings are either friendly or hostile. If you have code-breaking skills, you can attempt communication, and try different tactics, like impersonating a deity or pleading for mercy. If you cannot achieve meaningful relations, fight.

The controls for Star Command are somewhat cumbersome. They consist of single-key commands, and question/answer interaction. A number of bugs showed up, and there are also some things I never did figure out, such as why a weapon sometimes showed up with an asterisk next to it.

Despite these small annoyances, Star Command is quite playable. Since different missions show up each time you start a new game, it remains a challenge.

David Plotkin, April

Star Command, $14.95. Strategic Simulations Inc., 675 Almanor Ave., Sunnyvale, CA 94086 (408) 737-6800

Stik-Gripper

Stik-Gripper

The hand is not the steadiest of appendages, particularly for playing computer games. At the most critical times, a slip of the wrist can mean the difference between life and death. That's why a product like Stik Gripper is so handy. It's a joystick holder that keeps your game control rock solid. Flight simulation fans who often rely on both the keyboard and joystick will find Stik Gripper especially helpful. There appears to be a limit to the kinds of joystick it can accommodate. Know before you buy.

Dave Gregg, October

Stik-Gripper, $18.95. Duggan DeZign Inc., 300 Quaker Lane, Suite 7, West Warwick, RI, 02886 (800)843-1223

Super Hang-On

I've never been much for car and motorcycle simulations — they all seem to do the same thing and once you've tried one, you've tried them all. Well, opinions can and do change.

Graphically, Super Hang-On is a treat — when you speed up, you really feel like you're speeding up. And the scenery even changes as you travel across the various continents. For instance, as you zip through North America, you see the hulking skyline of New York city change to the greenery of the northeast coast and the deserts of the southwest.

Dave Gregg, June

Super Hang-On, $39.95. Data East, 1850 Little Orchard St., San Jose, CA 95125 (408)286-7074

Table Tennis

My first thought about a table tennis simulation was "Why bother? Haven't we evolved beyond Pong?" But Table Tennis is as far from Pong as the ST is from the old Atari 400. It's an excellent simulation of a serious, misunderstood, sport.

Game perspective is similar to what you see when you're actually playing table tennis (nobody who is serious about the game calls it ping pong); you look straight at your opponent across the table. Your opponent can be a friend or the computer. There are 20 fictitious computer foes to choose from, each possessing a different style and ability level.

About the only serious shortcoming in Table Tennis is you cannot practice serving. It takes a while to develop an effective serve, just as in real life. But then, that's why this is a real simulation.

Scott Wasser, June

Table Tennis, $34.95. Digiteck Software, 708 W. Buffalo Ave. #200, Tampa, FL 33603 (813)222-0006

Targhan

The graphics and sound in Targhan are outstanding. The Targhan-character is big

and animated in a very life-like fashion. The backgrounds are often stunningly beautiful with little animated extras such as a browsing deer or a squirrel climbing up a tree.

I found Targhan to be a pleasing balance of adventurous exploring and arcade action, something that is not all that easy to find in computer games. And because of this balance, Targhan can be enjoyed on two levels: either as hack-and-slash arcade slaughter or as a role-playing quest. And the fact that it runs in monochrome as well as color will only heighten its appeal

John S. Manor, March

Targhan, $29.95. Digitech Software, 708 W. Buffalo Ave. #200, Tampa, FL 33603 (813)222-0006

TV Sports: Football

The graphics in TV Sports: Football are fair. The players move quickly and change direction with every twitch of your joystick. Balls can be kicked or thrown as precisely as you can control the stick. It can, however, be difficult to see whether a ball is caught or dropped, and occasionally, a runner's progress is impeded by a blocker or stopped by a tackler even though there appears to be daylight between the two players.

TV Sports Football

Although TV Sports: Football has its drawbacks, it ranks far above most other sports simulations. Thanks to the responsive graphics and excellent user interface, it is a great deal of fun to play.

Scott Wasser, June

TV Sports: Football, $49.95. Cinemaware Corp., P.O. Box 5083, Westlake Village, CA 91359 (800)527-4391

Wayne Gretzky Hockey

To some fans, ice hockey is a sport of power and violence. To others, it's a well-choreographed dance of finesse and precision. And to still others, it's a strategic battle of the wits; a chess game on ice. Wayne Gretzky Hockey is all of these. It's one of the most complete, realistic and engrossing computer sports simulations ever created for the ST.

Scott Wasser, June

Wayne Gretzky Hockey, $49.95. Bethesda Softworks, 15235 Shady Grove Road, Suite 100, Rockville, MD 20850 (800)677-0700

HARDWARE

Advanced Gravis MouseStick

The Advanced Gravis MouseStick is a controller for the ST that can replace your mouse, joystick or both. It consists of two ►

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units: the stick itself and the Gravis Mouse Processing Unit (GMPU). The stick is mounted on a wide, stable base with rubber feet, and is connected to the GMPU, which plugs into your joystick or mouse port. There are two fire buttons on the base and one on top of the stick.

The Gravis MouseStick is a powerful alternative controller that includes a whole lot of options — if you need them. But quite frankly, I find it much easier to simply manipulate my cursor with a regular old mouse and play games with an eight-position joystick. But you may feel differently. If you've been looking for these features, then you'll definitely want to check it out.

David Plotkin, August

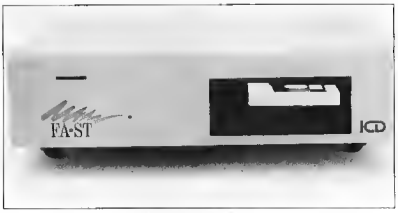
Advanced Gravis MouseStick, $99.95. Advanced Gravis, 1602 Carolina St., Unit D-12, Bellingham, WA 98226 (604)434-7274

FA.ST Tape Backup

The drive is fast, accurate and works very well. It isn't cheap, but it will pay for itself in peace-of-mind and in the ability to easily restore your precious data if you should ever need to.

Is the FA.ST Tape Backup for you? If you don't store lots of important data on your hard drive, or you really do backup to floppy on a regular basis, then I guess not. But if your livelihood depends on that data, or you value your peace of mind, then I highly recommend it. For just a few minutes a day, you can make sure your data is backed up and safe. And, the first time you have hard drive trouble, you'll be extremely glad you did buy one — I know, because it's already happened to me.

David Plotkin, May



FA.ST Tape Backup

FA.ST Tape Backup, $999.95. ICD Inc., 1220 Rock St., Rockford, IL 61101 (815)968-2228

Lynx

All its hype is justified: The games available for the Lynx are some of the most addicting in years and overall the system blows Nintendo's GameBoy out of the water.

The 4MHz processor keeps the action fast paced and custom chips handle tasks normally done in software. The hardware allows for an infinite number of sprites, has a built-in scaling system to create realistic scenes as you approach or move away from objects and has collision detection. Internally, the joypad and buttons use switches with conductive rubber contacts that provide high reliability.

Atari's Lynx is a really high-quality game system. The action is very realistic, fast, and smooth. I have gone through three sets of batteries and several hours of AC power in only two weeks of use. Atari has a bit in their hands, literally.

Stephen Mortimer, April

Lynx, $179.95. Atari Corp., 1196 Borregas Ave., Sunnyvale, CA 94086 (408) 745-2000

MASTER-3S Disk Drive

The MASTER-3S from Konyo International looks very much like the Datel drive. The MASTER-3S, however, has a standard connector, so you can replace the cable if it fails. It also sports a daisy-chain connector, making it suitable as either an A: or B: drive. The MASTER-3SD, which sells for $20.00 more, displays the track number.

James Burton, December

Master-3S Disk Drive, $169.00. Konyo International, 1073 N. Batavia St., Suite B, Orange, CA 92667 (714)633-1026

MegaByte Disk Drive

The MegaByte drive from MegaByte Computers is almost the twin of the Datel RF302R. Approximately the same size as the Datel, it also lacks a removable cable and a daisy-chain connector, plus, it does not have a power switch.

The unique thing about the MegaByte drive is that it draws its five volts of power via a cable attached to the ST's joystick port. This arrangement leaves your joystick port unusable, unless you have a connector which allows you to plug two joysticks into one port.

Another option is to buy the external power supply from MegaByte, which costs $19.95.

James Burton, December

MegaByte Disk Drive, $139.95. MegaByte Computers, 909 Melbourne, Hurst, TX 76053 (817)589-2950

Megafile 44

I've not opened up Atari's Megafile 44, so I don't know its internals. The case is much like a Megafile 30 case, with a hole cut in it for the hard disk to go through. I would guess Atari is using their standard ACSI-SCSI interface boards and power supplies. I have no idea why Atari, which can build things less expensively than anyone else, is charging more than its competition for this drive.

Atari, as usual, supplies their HDX software; you'll want HDX 3.01 (or later) to handle these drives, as special software is needed to handle changing hard disks in mid-session.

Megafile 44

— David Small and Doug Wheeler, March

Megafile 44, $1,195. Atari Corp., 1196 Borregas Ave.,

Sunnyvale, CA 94086
(408)745-2000

SQ-44 ST

The drive's technology is based on the Syquest 44MB removable cartridge. In other words, the actual "platter," the place on the hard disk where data is stored, is portable between Syquest drives. The platter itself is protected by a very tough clear-plastic case.

The Carter Graphics case we saw is light, compact and very portable, about the size of a half-height hard disk and power supply; if you need to lug around a disk drive, this is ideal. It would easily fit in a briefcase.

Carter Graphics also offers a Syquest disk pack crammed full of Atari ST public-domain programs, pictures and so forth, for $15 over the cost of blank media. When I identified myself and asked some fairly technical questions, they had no trouble answering them.

David Small and Doug Wheeler, March

SQ-44 ST, $779.00 (base price). Carter Graphics, 914 W. Sunset Blvd., St. George, UT 84770 (801)628-6111

Toadfile 44

Toadfile 44

The Toadfile case is pretty big; it has room for another drive internally, which could be just the ticket if you'll plan to expand later. (Adding the drive would be a matter of extending the SCSI cable inside — a few hour's easy work at most).

The Toadfile 44 units are essentially the same component brew as the Megafile 44 and the SQ-44 ST: box; power supply (off-the-shelf stuff); ICD interface (excellent), which translates Atari's "ACSI" DMA to industry-standard SCSI; and the Syquest 44 meg SCSI drive. That's it. The ICD interface gives you a battery-backed-up clock as well, so your ST doesn't forget what time it is when you turn off the system.

Each drive connects through the ST's DMA port, and can be "daisy-chained" with other DMA equipment, such as the SLM-804 laser printer, other hard disks, CD-ROM players, etc.

David Small and Doug Wheeler, March

Toadfile 44, $799.00. Toad Computers. 556 Baltimore Annapolis Blvd., Severna Park, MD 21146 (301)544-6943

RF302R Disk Drive

The Datel RF302R is so small that its tan-colored metal case is barely larger than the drive mechanism. Like most drives, it has an On/Off switch in the back ►

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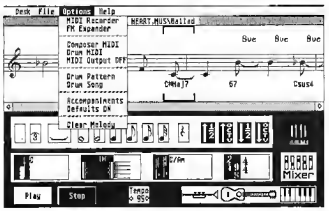

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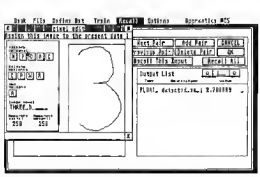

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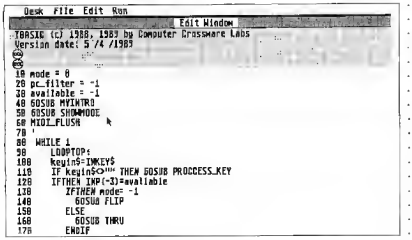


Dr. T's T-Basic

of the unit. But it does not have a daisy-chain port, which relegates it to being the B: drive in a two-drive system. Also, the data cable is permanently attached; a bad cable means sending the whole drive for service.

—James Burton, December

RF302R Disk Drive, $129.95. Datel Computers, 3430 E. Tropicana Ave. #67, Las Vegas, NV 89121 (800)782-9110

SF314 Disk Drive

The largest drive available for the ST, the Atari SF314 has a plastic case styled to match the ST computer, a bonus to those concerned with aesthetics. The SF314 has everything that should be considered standard on an external drive, including a port for daisy chaining a second drive to the system.

—James Burton, December

SF314 Disk Drive, $299.95. Atari Corp., 1196 Borregas Ave., Sunnyvale, CA 94086 (408)745-2000

MIDI

Cubase

Once you've laid hands on a product that makes your work faster or more intuitive, it's painful to go back to the old ways. That's my gut response to Cubase. Cubase combines the best of several sequencing styles into a logical and efficient graphical environment.

Cubase version 1.5 sports a number of enhancements over the original release version: a new editing window, a new quantization type, an Auto Save function, support for Moniterm's 19-inch monochrome monitors, built-in mouse accelerator and the list goes on. In addition, compatibility problems with GDOS and TOS 1.4 have been corrected (though it's still incompatible with the popular Pin-Head system accelerator program from CodeHead).

Any sequencer with this range of capabilities and such a friendly and efficient graphic environment is attractive. If you've got the bucks, Cubase is highly recommended.

David Snow, August

Cubase, $579.00. Steinberg/Jones, 17700 Raymer St. #1001, Northridge, CA 91325 (818)993-4091

Dr. T's T-BASIC

T-BASIC is the first programming language for the ST designed specifically to interface with a high-end MIDI sequencer. It's a superset of ST BASIC and runs either as a stand-alone program or under Dr. T's Multi-Programming Environment. In addition to the standard repertoire of BASIC statements and functions, it provides command and data-structure access to Dr. T's popular Keyboard Controlled Sequencer (KCS) and the sequence data files created by it. The manual shows you how to adapt standard BASIC programs to run under T-BASIC.

If you know standard BASIC and are looking for a way to do some MIDI programming without writing a lot of low-level code, T-BASIC may meet your needs, especially if you own KCS. If you're already a programmer and use a sophisticated editor you may feel a bit cramped in the T-BASIC environment.

Steve Johns, May

Dr. T's T-BASIC, $149.00. Dr. T's Music Software, 100 Crescent Road, Suite 1B, Needham, MA 02194 (617)455-1454

Final Cut

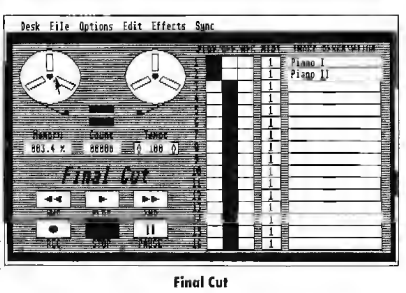
Final Cut has everything a musician needs in a software sequencer. Furthermore, it's designed to resemble a multitrack tape deck which makes it very easy for beginning musicians to learn MIDI, while still being useful to professionals.

The program makes good use of GEM, letting you use your mouse for all processing (though there are keyboard equivalents for most functions). One nice feature is the ability to set your own expertise level. When you're first learning, you get more help but, as you become familiar with the program, the help disappears and doesn't get in the way.

I put it to the test, playing complex pieces like Gershwin's "Rhapsody in Blue." It handled all four hands of fast piano without a lost note. Overall, Final Cut is simple enough that the beginner won't be lost, advanced enough that the professional will be comfortable and perfect for everyone in between.

Rick Duff, February

Final Cut, $89.95. Legend Software Systems, 3508 34A Ave., Edmonton, Alberta T6L 5E8 (403)450-0736



Final Cut

Pro MIDI Player

The basic function of the Pro MIDI Player is to access and play a large number of MIDI sequences without having to load from disk during a performance. Standard MIDI level 0 format files are supported (single stream, multichannel), as well as real-time recording of MIDI sequence and system exclusive data.

Unfortunately, there are absolutely no editing capabilities. Only record and playback are implemented, along with a couple of features such as a text file to accompany sequences and

external display of song name and status messages to synthesizer alpha-numeric displays.

As is often the case with software designed for complex musical requirements, Pro MIDI Player offers some nice features while excluding others that many people may find necessary. For example, there is no way to automatically send a Start message at the beginning of playback to trigger a drum machine (or a Stop at the end!).

Should you base your performance system around the Pro MIDI Player? This depends largely on your budget. For the price, it offers a reliable performance system that will continue to grow as more updates become available.

Mihai Manoliu, October

Pro MIDI Player, $99.00. Pro MIDI Systems, Box 13, Lanrier, WA 99146 (604)447-6264

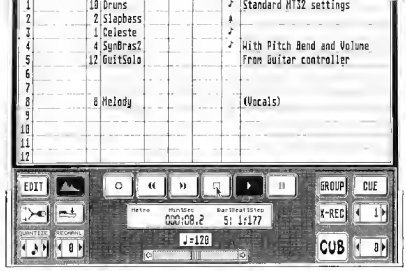
Tiger Cub

Leave it to Dr. T's to bring MIDI to the novice user. Tiger Cub is a synthesis of several Dr T's programs: The MIDI Recording Studio, Keyboard Controlled Sequencer (for recording and playback), TIGER (graphical MIDI data editing) and The Copyist (scoring). It also includes The Multiple Program Environment (Dr. T's proprietary multi-application manager), which lets you switch between up to eight other Dr. T's programs, depending on your memory configuration.

The manual explains the basics of the programs in Tiger Cub, as well as general MIDI concepts, and includes a short tutorial, reference tables and index. But the program is so friendly that you'll soon use the manual as a reference rather than a crutch.

The folks at Dr. T's Software have clearly gone out of their way to make Tiger Cub intuitive and instructive. Once you understand the basic concepts of MIDI, you'll be making music with the best of 'em.

— Robert Edson, November



Dr. T's Tiger Cub

Tiger Cub, $99.00. Dr. T's Music Software, 100 Crescent Road, Suite 1B, Needham, MA 02194 (617)455-1454

UTILITIES

DC Utilities

(*Editor's Note*: Current version is 2.0.) Every so often a utility comes along that's so valuable you wonder how you ever got along without it. Double-Click Software's DC Utilities is a package that includes seven (count 'em) such wonders.

DC Squish compresses executable programs, like .PRG, .TTP and accessories. DC Xtract is one of the fastest programs for extracting ARC files. DC Deskey lets you define your own menu equivalent keyboard commands. DC SEA takes an ARCed file and converts it into a self-extracting ARC file. DC Desk Organizer lets you customize your desktop; it creates a .PRG file that sets up the desktop exactly as you specified in the .INF file. DC Ramit lets you set up a RAM disk with any available drive.

Overall, DC Utilities is an outstanding buy. The programs are not copy protected and customer support is excellent, both by phone and BBS. This package definitely has my recommendation.

David Plotkin, August

DC Utilities, $39.95. Double Click Software, P.O. Box 741206, Houston, TX 77274 (713)977-6520

Diamond Back Version 1.0

(*Editor's Note*: Current version is 2.0.) The most unique feature of Diamond Back is that you can specify exactly what you want to back up. This program can back up your entire disk, perform an incremental backup, back up only selected directories or files, and compress and encrypt files.

The restore dialog box lets you restore to any drive partition, but you must tell the program if the files are compressed or encrypted. Oddly, the program doesn't code this information on the disk.

Diamond Back is a very powerful, flexible program that does the job it is intended to do and does it very well. It comes with an excellent manual and is highly recommended — especially for its incremental backup feature.

—David Plotkin, January

Diamond Back, $39.95. Data Innovations Inc., 127 N. Front St., Rising Sun, IN 47040 (812)438-3733

Hard Drive Turbo Kit

This package of hard-drive utilities includes a backup facility and an optimizer combined in one program called Toolkit. The other program in this package is called M-Cache, which provides a RAM cache for your hard drive.

Toolkit doesn't really have a manual. Oh, there's a bunch of paper stapled together and labeled "Manual," but it is absolutely worthless. None of the items in the drop-down menus are explained, nor why you might want to use some of the more arcane ones.

Fortunately the cache and optimizer programs aren't complicated enough to suffer from the poor documentation. All three pieces of the package are solid and useful, even if you aren't brave enough to experiment with the mystery functions.

David Plotkin, January

Hard Drive Turbo Kit, $39.95. MichTron, 3201 Drummond Plaza, Newark, DE 19711 (302)454-7946

Universal Item Selector III

The Universal Item Selector is probably one of the most popular products ever developed for the ST. It is an invaluable substitute for the inadequate file selector native to the ST's operating system.

With its many enhancements, it is well worth the price, and the upgrade policy ($5 with UIS II) is more than fair. The small manual is excellent and a great improvement over earlier versions as well. This is one of those pieces of software that, once you've tried it, you don't know how you ever lived without it.

David Plotkin, December

Universal Item Selector III. ►

$24.95. Application and Design, 909 NW Starlite Place, Grants Pass, OR 97526 (503)476-0071

WORD PROCESSING

1st Word Plus

The big brother of 1st Word, this document processor is a welcome relief to users who are still using the original program released in the early days of the ST. All files from the original program are completely compatible, but 1st Word Plus adds enough options to make it infinitely more valuable than its predecessor. It can import pictures and works with the fonts included with your printer.

A powerful mail-merge program and picture-conversion utilities are included within 1st Word Plus along with an intelligent spell checker that uses a 40,000-word dictionary. At this time, 1st Word Plus is the only program that incorporates graphics and still allows access to a spell checker.

Dan Fruchey, April

1st Word Plus, $99.95. 1st Word Plus, P.O. Box 15008, Portland, ME 04101 (207)874-0702

Script

Script includes multiple fonts, graphics importation and an effective interface that make it an impressive product, until, that is, you try to print.

Installing Script is a snap. It is completely GEM-based, and very fast. It can display up to four documents in separate windows.

Script supports the usual word processing functions. It saves and imports ASCII text, but cannot read any other format.

The problems with Script are primarily in the printing. Margin settings are particularly frustrating. You cannot set the right or bottom margins, only the left and top. To add to the frustration, these margin settings don't get saved so you must set them every time you reload the file. Printing with the top margin set causes a document to run off the bottom of the page in normal printing mode, although not in draft mode.

David Plotkin, October

Script version 1.0, $79.95. Megamax Application Systems, 1200 E. Collins #214, Richardson, TX 75081 (214)699-7400

Tempus II

Tempus II is a slick text editor that provides almost any option a programmer could ever ask for. It includes a built-in RPN calculator, character-conversion tables, and a unique file-selector box with masking templates for locating source codes. It uses its own desktop that includes GEM-like icons such as a trash can, clipboard and disk drives.

I can only recommend Tempus II for programmers; it's too specific for those who only need to edit text on a casual basis. It takes sometime to understand the many modes available in this text editor, but learning time is much shorter than that required with a text processor.

Dan Fruchey, April

Tempus II, $79.95. Micli1ron, 3201 Drummond Plaza, Newark, DE 19711 (302)454-7946

Wordflair Version 1.0

(*Editor's Note*: Current version is 1.12.) Goldleaf has finally released Wordflair, a unique document processor that at one time was to have been released under the Atari software label. Wordflair combines multiple GDOS fonts, math functions, a graph generator, database and graphic importation with text processing in an exciting way. The program creates everything internally except image and metafile graphics, which must be imported.

It's the closest thing I've seen yet to an all-in-one product. Wordflair is great for creating forms and form letters and will increase speed and flexibility in business settings. With Wordflair you can concentrate on creating a page, not the half a dozen additional programs you normally need to create a page that uses all of these page components.

Dan Fruchey, April and June

Wordflair, $99.95. Goldleaf Publishing Inc., 700 Larkspur Landing Circle, Larkspur, CA 94939 (415) 461-4552

WordPerfect

One of the most powerful text processors available on any system has made its way to the Atari market. While it's a little option heavy for many home users, it will cover any growing needs.

Word Writer ST

Learning to use the functions completely requires more time than most other products because of the many options available. The program is highly configurable and, once you have defined base page layouts and your own macros, much of the page-creation process is automated.

Product support is excellent, with regular upgrades and unlimited phone support from knowledgeable representatives. Atari owners who have used the program on PCs will have no problem running WordPerfect almost immediately.

Dan Fruchey, April

Word Perfect, $250.00. WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057 (801)225-5000

Word Writer

At the time of this writing, Word Writer is the most popular text processor available for the ST. Small wonder: It's well rounded, easy to use and logically organized. The program takes advantage of almost every standard word-processing function the average user requires.

The program includes a document outliner, thesaurus and spell checker with a 90,000-word dictionary. The dictionary is not very intelligent, slowing the correction process, but it is adequate for most uses. The only major addition that can be made is a footnoting function. Timeworks has not released an upgrade in two years but they provide ongoing support by phone.

Dan Fruchey, April

WordWriter, $79.95. Timeworks Inc., 444 Lake Cook Road, Deerfield, IL 60015 (708)948-9200

How To Get START Programs Up And Running

1) Write protect your disk. Move the tab on the back of the disk so that you can see through the hole in the disk case. This prevents the accidental deletion of files on the START disk.

2) Make a backup copy. We format the disk using TWISTER.PRG (from the December 1990 issue) to increase the size of a double-sided disk to 800K. You can always copy the START disk onto a hard drive. To back up onto a floppy, run STARTCPY.PRG (it's on your START disk) and follow the instructions. Have a blank disk ready.

3) Store the original and use the backup.

4) Some of the files are compressed so that we can fit more programs on the disk. In this issue the compressed files are GRAMMARC.PRG, HURRYARC.PRG, and TIGERARC.PRG. These files must be uncompressed before they can be used. We use Double Click Software's DC SEA utility to create self-extracting archive (ARC) files. To un-ARC a program, simply double-click on the filename.

5) When the dialog box appears, choose Extract.

6) When the file selector appears, choose a destination disk (hard disk, RAM disk or floppy disk) for the uncompressed files. If you are not sure how to use your file selector, refer to your ST manual or your replacement file-selector documentation. Do not attempt to use your START disk or backup copy as a destination disk — there isn't enough room to hold the files. Make sure the destination disk has enough space for the uncompressed files, whose sizes are given below:

HURRYARC.PRG — 79K
GRAMMARC.PRG — 243K
TIGERARC.PRG — 537K

The screen goes blank, then the files are listed as they are extracted, and marked "OK" if the uncompression is successful.

7) To use the rest of the programs (the un-ARCed ones) on your START disk, simply copy them to another disk. Please refer to the article which describes the program for instructions.

Problems

Problems with your START disk? It is possible that the disk has been damaged in transit. To receive a replacement copy, follow the procedure below.

Subscribers: Call Subscription Customer Service at (815) 734-6309 on weekdays 7:30 a.m. to 10:30 p.m. Central Time. Your subscription will be confirmed, and a replacement disk will be sent to you.

Non-subscribers: Send your original START disk to START Disk Replacement, 544 Second St., San Francisco, CA 94107. A replacement disk will be sent to you.

compatible
not applicable

	Folder or Archive	Size	Memory 512K	Memory 1MB	Resolution Low	Resolution Med	Resolution High	Notes
Beginning Grammar	GRAMMARC.PRG	243K						
Crossword Creator Update	CROSSWRD	158K						Original appeared in June 1990.
Hide-O-Rama	HIDORAMA	35K						
Hurry!	HURRYARC.PRG	79K						Not compatible with TOS 1.6
Phase-4 Animation	LEXICOR	124K						Copyright 1990 by Lexicor Software Inc.
Tiger Cub Demo	TICERARC.PRC	537K						Requires double-sided drive or hard disk. Copyright 1990 by Dr. T's Music Software Inc

Let's discuss the Issues!

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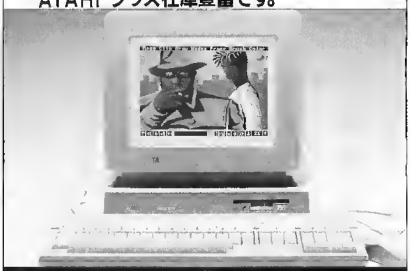

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Antic

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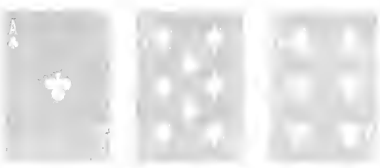
Antic Cookbook, page 88



Canfield Solitaire, page 90

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I/O BOARD

Consoling Words

After ANALOG folded, I opted to have the remainder of my subscription transferred to ANTIC. However, my current subscription status with ANTIC does not reflect this.

I've also heard that ANTIC has ceased publications, but that subscribers will be receiving START, which will have an 8-bit section, but no 8-bit disk. This is a terrible loss for the Atari community. If it is any consolation, let me express my gratitude for your effort in putting out such a quality magazine for so many years. I sincerely hope you'll continue to fight for an 8-bit corner in START.

Ed Hall
Yellowknife, Northwest Territory
Canada

As you know, the economics of the dwindling 8-bit market forced us to merge ANTIC into START. Adding former ANALOG subscribers at the same time was a major project that delayed the mailing of START to ANTIC subscribers while the databases were merged correctly. The mailing label on your latest copy of START should show your new expiration date. You should get two issues of START without disk for every issue of ANTIC or ANALOG with disk. ANALOG non-disk subscribers will get one issue of START for every issue of ANALOG remaining, but the ANALOG subscriptions weren't actually added in until the December 1990 issue.) If your label still doesn't reflect these changes, or any other problems crop up, call our subscription customer service at (815) 734-6309. — ANTIC ED.

Exosperoting XMM801

The Atari XMM801 is a fine but exasperating printer. As an owner, I have had to learn some helpful tricks in adapting it to work with some commercial software, and I'd like to share a couple of tips.

To use some Hi Tech programs such as PrintPower and AwardWare, boot the program and go to Printer Set-Up. Select the ESC2-IBM printer and you will return to the main menu. Now choose Select Options. This presents another menu. Choose the Send Line Feed option, and return to the main menu. Save these selections, and you're in business. ►

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When you use single sheets of paper the printer stops printing at 60 lines. To use envelopes or shorter pieces of paper, you need to send a simple, one-line BASIC command to your printer. Turn on the printer, then type:

LPRINT CHR$(27);"O";

then press [RETURN]. (Note that the character in quotes is the letter O and not zero.) This sends a code to the printer that turns off the paper-out detector, which will stay off until you send a new code to turn it on again, or turn off the printer.

Vito A. Raia
Kenneth City, FL

ANTIC INDEX

I'd love to have an index to my collection of ANTIC magazines. I've started doing some indexing of programs on my own, though I've had to change names when the title doesn't make the program's functions clear. The next thing needed is to add in all the updates and fixes that ran in the I/O Board section.

It's just hard for me to believe that a computer magazine could not take existing files and create almost any type of index and cross-index.

Fred Brune
Kenner, LA

As you've noticed yourself, indexing magazines isn't quite as straightforward as it might first appear. There is, however, an unbelievably comprehensive index on CompuServe. This index covers all of ANTIC through the beginning of 1989. The index takes advantage of CompuServe's mainframe computers to provide a wealth of information, even some whole or excerpted articles. Unfortunately, there's no practical way to print such a huge index.

To use the Antic Index, you'll have to go online on CompuServe, which means you'll need a modem and a telecommunications program. To find out about getting a CompuServe account, call them at (800) 848-8199, or (614) 457-0802. To get to the Index, just type GO ANTIC from any CompuServe menu and select Antic Index from the next menu. Instructions for using the index can be found in the February, 1989 issue of ANTIC.

QUIZZER QUERY

The program QUIZZER.BAS from the April/May 1990 Antic Disk seems to print only the first three questions. Repeated tries have gotten the same results, whether I try printing in normal or condensed print. Why won't all my entries print? (I have an Epson-compatible Legend 1380 printer.) Also, why must I reload the input questions every time I press the [BREAK] key?

Joseph Bartolone
Stuart, FL

Without a Legend 1380 printer, we can't explain why you're having trouble — the program works fine on all our in-house printers. Maybe another reader with that printer can help? Also, try starting over with an all-new file to make sure you don't have an odd character in your file that confuses either the computer or the printer. You have to reload the input questions because the program reinitializes every time you RUN it, tidily clearing out the memory — including your entries. Instead of using RUN to restart the program, type GOTO 100 to return to the main menu without losing data. — ANTIC ED

AVUE ADDRESS CHANGE

We gave an incorrect mailing address in our review of AVUE, the Analog Visual Utility Environment (November 1990). The correct address is EXIT, P.O. Box 25251, Washington, DC 20007. (703) 441-1525. Checks should be made out to Norman Thornton.

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NOW! COPIES all **ENHANCED DENSITY** programs plus retains all of the features of our World Famous **SUPER ARCHIVER!** (see above). Allows you to **COPY** or **CREATE** single or **ENHANCED** density protection schemes (including **PHANTOM SECTORS!**). Completely automatic, compatible with the **BIT-WRITER!**, the **ULTIMATE BACKUP/PROGRAMMING** device! Only $99.95 plus $4 S/H/I. **NOTICE!** If you already own a **SUPER ARCHIVER!**, you can upgrade to a **SUPER ARCHIVER II** for only $29.95 plus $5 S/H/I (disk only-no additional hardware required)

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The Super Archiver '**BIT-WRITER**' is capable of duplicating even the 'uncopyable' EA and SYN series which employ 34 FULL sectors/track. The '**BIT-WRITER**' is capable of reproducing these and **FUTURE** protection schemes of non-physically damaged disks. Simple installation. **PLUG-IN** circuit board and 4 simple solder connections. The '**SUPER ARCHIVER**' with the '**BIT-WRITER**' is the ultimate **PROGRAMMING/COPYING** device for Atari 1050's. **EXACT DUPLICATES** of originals are made! Copies run on **ANY** drive. Must be used with Super Archiver. Only $79.95 plus $5 S/H/I.

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The **Black Box** is a device for your XL or 130XE computer that adds tremendous power to your 8-bit Atari. It has two buttons, two switches, and a set of dip switches visible from the outside. It plugs directly into the back of the 600XL, 800XL, and 130XE computers. Custom cases may be an optional expense. The **Black Box** performs three main tasks: Interface to a SASI/SCSI bus device (hard disks), Parallel printer port, and a RS232 port. A fourth option, available soon, will be a floppy disk port, especially useful to XF-551 owners. The SASI/SCSI port provides the necessary signals for hooking up most common hard disks. You may partition your hard disk into as many drives as you wish, up to 9 can be accessed at a time. By pressing one of the buttons on the **Black Box**, you will enter the configuration menu, where you can re-assign drive numbers, etc. When you exit, you will be right back in the program you were running when the switch was pressed. Each hard disk can be write-protected. The Parallel Printer port will allow you to hook up any printer that uses the standard Centronics interface. As an option, you can use the computer's extra memory as a printer buffer or order the **Black Box** with 64K of on-board RAM. You may assign printer number and line-feed options within the menu (for use with multiple printers). Another amazing feature of the **Black Box** is the built-in screen dump. By pressing a button (on the box) the contents of your screen will be dumped to your printer (you can define text or graphics modes with a switch)! The RS232 port supplies the full RS232 spec signals for connection to a modem, or another machine (for null-modeming). The handler for the **Black Box**'s modem port is built in and takes up NO memory! The port handles rates up to TRUE 19.2K BAUD! A future upgrade for the **Black Box** is a floppy disk interface board. This will allow the addition of up to four 5.25" or 3.5" mixtures of floppy drives to be used with the system. The drives will act like standard single/enhanced/double density disk drives, but MUCH faster! All drives will be Super Archiver compatible and support up to 2 sides of 80 tracks. Along with this hardware upgrade will come software capable of reading, writing, and formatting disks in IBM's MS-DOS format and the Atari ST format, and allow you to transfer files between those disk formats and the Atari's format. In addition, a machine language monitor has been added to allow memory disassembly, memory/register changes and more. The Price of the **Black Box** is $199.95 for the basic unit and $249.95 with 64K of RAM (for printer spooler) plus $8 for S/H/I. An optional custom **BLACK BOX** case is available for $39.95 extra. The Black Box is a product of Computer Software Services. Not the Black Box Corporation!

$199.95 The "MULTIPLEXER"!© $199.95

This device brings the power and flexibility of larger systems to your 8-bit. The **Multiplexer** is a device (actually a collection of modules) that allow up to 8 Ataris to read and write to the same drive (typically a hard disk), printer, and talk to each other. One 'master' computer (any 8-bit) is equipped with the master **Multiplexer** interface. Then up to 8 'slave' computers can hook up to the master, each having their own slave interface. The 'common' peripherals (things that are to be shared) are connected to the master computer. On each slave, all disk and printer I/O is routed through the master, so no drives are needed on them. The master computer can be configured in any manner you wish - you can for example have certain peripherals 'local' to the slave, or routed to a different number on the master. Under development is a BBS system that will make full use of this device, allowing up to 8 lines/users to be using the system at the same time! A multiuser chat mode is a feature of this program, however, you do not NEED this program to run a BBS with the **Multiplexer** (but be warned that not all BBS programs will run concurrently). All slaves are independent, and do not need to have the same program running on them. This system is excellent for BBS SysOps because you can be using your hard disk(s) while still running your BBS uninterrupted! Another example is in a classroom situation, or anywhere a disk needs to be shared by different people. This is an EXCELLENT programming/debugging tool as well. The **Multiplexer** price is $199.95 for a master and two slave units (plus $5 S/H/I). Additional slave units are $99.95 each.

HARD DRIVE & LIMITED SPECIALS

Hard Drive Systems include drive, Black Box, a zero RF power supply, controller, cables, DOS and assorted HD software. All systems are wired, preformatted and have sample programs on them. Attach to your computer and BOOT! No hassles! We have systems available from 5 meg to 108 meg. Prices start as low as $399.95!

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20	Power Plus memory upgrade (256K or 320K)	$99.95
	Lots of used equipment ... cheap ... call!	
	VERY LIMITED—Remote IBM type keyboard with interface for Atari 8 bit computers ... complete!	$99.95

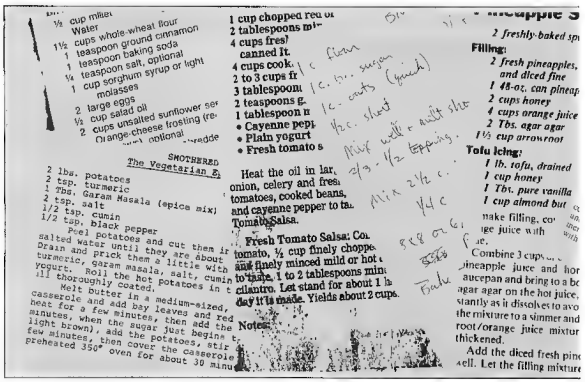
ANTIC COOKBOOK

Recipe Database Ends Kitchen Clipping Clutter

Your favorite recipes can be entered easily in this simple cookbook — a specialized database that stores and prints your favorite recipes for you. This BASIC program works on all 8-bit Atari computers with 48K and Epson-compatible printer.

I wrote the Antic Cookbook because my family and I continually collect new recipes. We collect cookbooks, tear pages out of magazines, cut recipes out of the newspaper, and if all else fails we scribble the recipe down on the nearest piece of paper. When the time came to find a certain recipe we would have to search through the cookbooks or sort through the pile of clippings. Often recipes got lost, or didn't seem worth the effort needed to find them.

So, I wrote the Antic Cookbook. Now we enter in those favorite recipes and avoid the pile of paper. We still collect cookbooks, but when we find a recipe we like we enter it into "Our Cookbook." Once a year, we print up a copy of our cookbook, and staple the pages together. When the pages get food splattered on them, it's a simple matter to print up a new cookbook. Our family has been using this program for over three years now, and we find it very useful. Being very simple, it has certain limitations, but it fills our needs.



Getting Started

Type in Listing 1, COOKBOOK.BAS, check it with TYPO II, and SAVE a copy to disk before you RUN it. Because the Antic Cookbook saves each recipe to disk as you go, and continually updates its index file, you should use a disk with plenty of room on it, preferably a freshly-formatted disk with Atari DOS 2.0 or 2.5 on it.

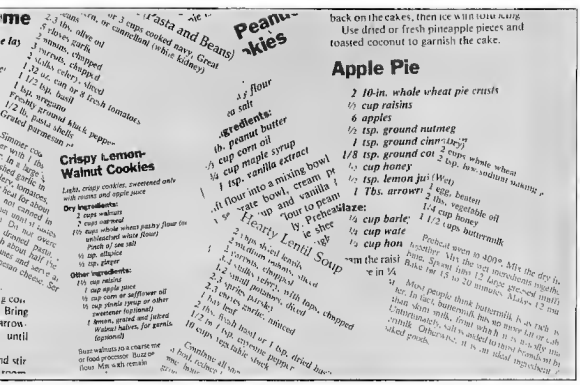
When you first RUN the program it searches for the recipe index on the disk. If it cannot locate an index it will tell you to "stand by" while it creates a new one. Once done, the program takes you to the Main Menu.

BY ANTHONY WATSON

Filing Recipes

The Main Menu lets you Find, Add or Alter a file (recipe). Of course, before you can find any files, you first need to enter some recipes to find. Press [2] to add a new recipe. First, type in the name of your new recipe, up to 36 characters long, press [RETURN], and the Ingredients screen will appear.

Type in the ingredients carefully, check each line as you complete it, then press [RETURN]. Once you press [RETURN] you can only correct the line by using the [CONTROL]-[ARROW] keys to return to that line and type over the information. Although some of the BASIC editor functions work (using [CONTROL]-[SHIFT]-[INSERT] to add a line, for instance), they can also mess up your files if you're not careful. Be extremely cautious when using any of the [CONTROL] combinations, and avoid adding too much text to any line.



When you've entered all your ingredients, check them carefully, as you will not be able to make any further corrections once you leave this screen! When you are certain the ingredients are correct, press [ESCAPE] to go to the Directions screen. Enter the directions just as you did the ingredients. You can continue past the bottom of the screen, if necessary. When you are done, check over your text, and press [ESCAPE]. The new recipe file will be saved to disk, and the program will then return you to the Main Menu.

Now that you have some recipe files entered, press [1] from the Main Menu to find a specific file.

The program will show you the first 20 recipe files in its index, out of a possible 60. Press the [SPACEBAR] to see the rest of the titles.

If you don't want to view a recipe, press [ESCAPE] to return to the Main Menu. If you do want to see one of the recipes, simply press the number beside it. Then choose whether you want to see the recipe on the screen, or have it printed in 40 columns or 80 columns. The 40-column option should work with most printers. The 80-column routine is configured specifically for the Star NX-1000 printer, but should work with most Epson-compatible printers.

Onscreen, some of the recipes with lengthy instructions may scroll by too fast for you to read. If that happens, use [CONTROL]-[1] to stop and restart the text. Press [RETURN] to go back and forth between the ingredients and the directions. To return to the Main Menu, press [ESCAPE].

Altering Files

From the Main Menu, press [3] to alter a file, then choose which file you want to change. From the new menu that appears, you can rename the recipe you've chosen, replace it with a new recipe, or erase it. If you choose to erase a recipe by mistake, you can retrieve it as long as you do not replace it with a new recipe. Choose Alter File, then specify the blank space, and rename it (any name will do). Your data should still be in place.

Unfortunately, you can't go back and make changes in your recipes once you've entered them. Instead, you'll need to replace the recipe with a new version, retyped from scratch. The program only allows 60 recipes in its index. Even so, I often run out of space before the index is full. I overcome this limitation by using separate disks (each with their own copy of the Cookbook) for different kinds of recipes, like MEALS or DESSERTS.

Unfortunately, you can't use DOS to transfer recipe files from one disk containing the cookbook program to another, because you need to update the index when adding or deleting any recipe files. (You could copy the whole disk and use the Cookbook program to erase any recipes you didn't want, of course.)

Despite its limitations, the Antic Cookbook has served my family well. (It sure beats all those little slips of paper with recipes scribbled on them.) I hope you enjoy the Cookbook as well. Happy Cooking!

Listing on page 99.

Anthony Watson of Vancouver, WA is a 26-year-old Electronic Technician currently working as a househusband to take care of his newborn daughter.

CANFIELD SOLITAIRE

Break the bank with this gambler's version of the popular card game

BY KEVIN O'NEILL

Test your wits and bet your money with this tricky version of solitaire. Your 8-bit keeps a running total of your winnings (or losses) in this BASIC card game. This program runs on Atari 8-bit computers with at least 48K memory and disk drive.

I found this interesting gambler's version of Canfield Solitaire in Hoyle's Book of Games. The basic rules are easy: The player buys a deck of cards for $50, then receives $5 for every card played on the foundation piles. If all 52 cards end up in the foundation, the player gets $500.

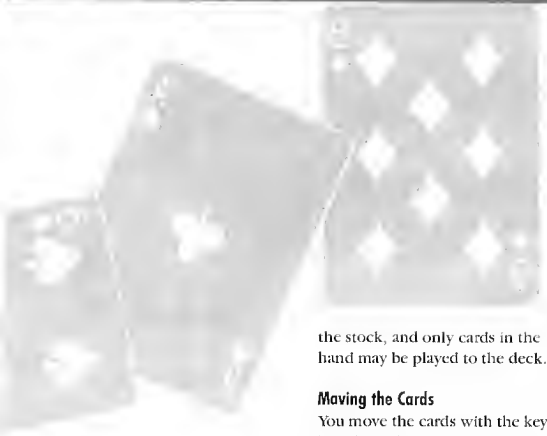
Getting Started

Type in Listing 1, CANFIELD.BAS, check it with TYPO II, and SAVE a copy to disk before you RUN it.

The computer first asks if you want cards dealt from the hand one at a time or in groups of three (more on this below). Make your choice by pressing the appropriate number. The computer shuffles the cards, then takes 13 cards off the top and puts them in the stock pile, face up. The next card is the first foundation. You've got $5 already — on your way to easy street. Next, four cards are laid side-by-side in the tableau, face up. The rest of the cards become the hand, to be played into the deck. Just to make things easy for players, the piles are all labeled onscreen, each separated pile identified by a letter, A-J.

The first card in the foundation sets the value for the foundations in all four suits. When (or if) cards with that value turn up, place them in the other foundation positions. Build the foundations up by rank and suit. The card order wraps around, with the ace above the king and below the two.

For example, if the first foundation card is the Queen of Hearts, the next cards played on that foundation would be (in order) the K, A, 2,



3...up to J, all in Hearts. You win the game, not to mention $500, when you build all four foundations up to thirteen cards.

The Tableau

The tableau builds down, black on red and red on black. Thus, the four of diamonds could be played on the five of spades or clubs. These piles also wrap around, with aces on twos and kings on aces. The top card of each tableau pile may be moved by itself, or the entire tableau pile may be moved as a unit, if its bottom card may be correctly played on the top of the destination pile. Empty spots in the tableau may be filled from the stock, the deck, or the top card of a tableau pile.

The cards in the hand may be turned up in sets of three, in which case you can keep going through the hand until you get stuck. The hand may also be played one card at a time, once through.

You may play off either the stock or deck onto the tableau or foundations. Cards may be moved within the tableau, or moved from the tableau onto the foundations. Once in a foundation, a card cannot be moved. Cards may not be played to the stock, and only cards in the hand may be played to the deck.

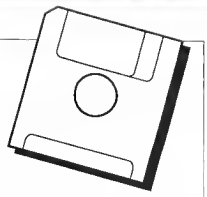
Moving the Cards

You move the cards with the keyboard. Each pile is marked with a letter, A-D for the foundation, E-H for the tableau. The stock is I, and the deck is J. To deal a card (or set of three cards) from the hand, just press the space bar. To move a single card, press the letter of its current pile, then the letter of its destination. To move a group of cards within the tableau, first press [T], then the letters of the two piles involved.

The computer will let you know once you've gone through the deck. If you are using the three-card play option, you can keep going through the deck, over and over. When you have come to a standstill, press [ESC] and your current winnings (or losses) will be tablulated. You can then [S]tart a new game, [C]hange the number of cards dealt from the deck, or [Q]uit.

Listing on page 95

Kevin O'Neil is a musician and printer from Westminster, Colorado. Though this is his first program to appear in ANTIC, he was a runner up in the ANTIC Music Processor song challenge (ANTIC, June 1989) and in the Rebound screen design contest (ANTIC, August 1987).



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TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combination, *hold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [◪] key—or [⅄] on the 400/800—then *release* it before pressing the next key. (Press [◪] or [⅄] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [◪].

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
♥	CTRL ,	♣	CTRL S
♦	CTRL A	♠	CTRL T
♥	CTRL B	♥	CTRL U
♦	CTRL C	♦	CTRL V
♦	CTRL D	♦	CTRL W
♦	CTRL E	♦	CTRL X
♥	CTRL F	♦	CTRL Y
♦	CTRL G	♦	CTRL Z
♥	CTRL H	♦	ESC ESC
♦	CTRL I	♦	ESC CTRL -
♦	CTRL J	♦	ESC CTRL =
♦	CTRL K	♦	ESC CTRL +
♦	CTRL L	♦	ESC CTRL *
♦	CTRL M	♦	CTRL .
♦	CTRL N	♦	CTRL ;
♦	CTRL O	♦	SHIFT =
♦	CTRL P	♦	ESC SHIFT CLEAR
♦	CTRL Q	♦	ESC DELETE
♦	CTRL R	♦	ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS
♠	ESC SHIFT DELETE
♥	ESC SHIFT INSERT
♦	ESC CTRL TAB
♦	ESC SHIFT TAB
♦	⅄CTRL .
♦	⅄CTRL ;
♦	⅄SHIFT =
♦	ESC CTRL 2
♦	ESC CTRL DELETE
♦	ESC CTRL INSERT

TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads **Antic**'s type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [*], then the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.

Don't type the TYPO II Codes!

```
W0 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II"

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? "TYPO II"
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press RETURN and edit line a
   bove.":GOTO 32050
```

CANFIELD SOLITAIRE

Break The Bank With This Gambler's Version Of The Popular Card Game

Article on page 90

LISTING 1

Don't type the TYPO II Codes!

```
MF 1 REM CANFIEED SOLITAIRE
QA 2 AEM BY KEOIN O'NEIL
YP 3 REM (c)1990, ANTIC POBEISHING, INC.
WS 8 OIM HOME1(13),HOME2(13),HOME3(13),HO
   ME4(13),A$(25),B$(20)
LW 9 OIM BILO1(27),BILO2(27),BIEO3(27),BI
   LO4(27)
QQ 10 OIM OECK(53),CAAO$(3),MOO(27),CAAO2
   $(3)
YM 11 SKOA=0:KLA=12222:A$="(SPACE) TO PLA
   Y FAOM HANO"
OF 12 GOSOB 6000
FO 13 B$="                              "
MS 15 ? "%";:SETCOLOA 4,12,4:SETCOLOR 1,0,
   0:SETCOEOR 2,12,4:POKE 82,0:POKE 764,2
   55:POKE 752,1
AR 20 ? "%";:POSITION 0,9:? "          WOOEO
    YOO PAEFEA"!? "          TO TOAN OP CAA
   O5"
KO 22 ? "          B AT A TIME, OA";:? "
          B AT A TIME?"
QK 25 CLOSE #1:OPEN #1,4,0,"K:";:GET #1,OE
   K:CLOSE #1:IF OEK=49 OA OEK=51 THEN 30

LI 27 ? :? "    OOOOH! A WISE GUY, HUH?";:F
   OA TO=1 TO 300:NEXT TO:GOTO 20
NJ 30 POKE 752,1:GOSUB 105:GOSUB 380:GOSU
   B 400:GOSUB 1000
0M 40 OPEN #1,4,0,"K:"
TT 42 POSITION 9,9:? B$;:POSITION 9,9:? A$

ZS 45 GET #1,KMOO
BH 50 IF KMOO=32 THEN GOSUB 400:GOTO 42
AY 55 IF KMOO=04 THEN GOSUB 5000:GOTO 42
PX 60 IF KMOV>60 AND KMOV<75 THEN GOSUB 1
   500:GOTO 42
KM 65 IF KMOO=27 THEN GOTO 7000
JO 70 GOSUB 1300:GOTO 42
ZP 99 ENO
AE 105 ? "%";:POSITION 14,11:? "SHOFFLING"
   ;:SKOA=SKOA-50:OEKOWNT=19
CE 110 FOA N=1 TO 52:OECK(N)=0:NEXT N
AX 120 FOA N=1 TO 13:HOME1(N)=0:HOME2(N)=
   0:HOME3(N)=0:HOME4(N)=0:NEXT N
OM 130 FOA N=1 TO 20:BILO1(N)=0:BILO2(N)=
   0:BILO3(N)=0:BILO4(N)=0:NEXT N
ON 140 FOA I=1 TO 52
KO 150 X=INT(52*AND(0))+1
MF 160 IF OECK(X)=0 THEN OECK(X)=I:GOTO 2
   00
NY 170 GOTO 222
FS 200 NEXT I
ZA 210 AETOAN
BS 222 FOA X=1+1 TO 52
MA 230 IF OECK(X)=0 THEN OECK(X)=I:GOTO 2
   00
LO 240 NEXT X
QU 250 FOA X=1 TO 1-1
MG 260 IF OECK(X)=0 THEN OECK(X)=I:GOTO 2
   00
MA 270 NEXT X
MH 280 GOTO 200
GE 299 REM OISPLAY SET-UP
LS 300 ? "%";:ONO=1:GOSUB 500:X=0:Y=5:GOSU
   B 800:POSITIUN 1,4:? "STOCK";:PUSITION
   2,9:? "<I>"
MJ 305 FOA F=J+II TO J+II+23:POKE F,124:N
   EXT F
BH 310 ONO=14:GOSUB 500:X=10:Y=1:GOSUB 00
   0:HOME1(1)=CARO:HOME=CO
OT 315 FOA F=J+AA TO J+AA+23:POKE F,31:NE
   XT F:CNTCRO=1
JG 317 IF CO=10 THEN 325
OH 320 POSITION 11,0:? "(FOONOATION)-->1S
   T CARO=";CARO$(2,2):GOTO 330
CC 325 POSITION 11,0:? "FOONOATION)-->1S
   T CAAO=";CARO$(1,2)
PH 330 POSITION 12,5:? "<A>";:POSITION 19,
   5:? "<B>";:POSITION 26,5:? "<C>";:POSITI
   ON 33,5:? "<O>"
AA 340 POSITION 19,12:? "//TABLEAO\\";:ONO
   =15:X=10:Y=13:GOSUB 500:GOSUB 800:POSI
   TION 12,17:? "<E>";:BIEO1(1)=CARO
OT 345 FOA F=J+EE TO J+EE+23:POKE F,31:NE
   XT F
80 350 ONO=16:X=17:Y=13:GOSUB 500:GOSUO 8
   00:POSITION 19,17:? "<F>";:8ILO2(1)=CAR
   O
YO 355 FOA F=J+FF TO J+FF+23:POKE F,62:NE
   XT F
UH 360 ONO=17:X=24:Y=13:GOSUB 500:GOSUB 8
   00:POSITION 26,17:? "<G>";:8ILO3(1)=CAR
   O
ML 365 FOA F=J+GG TO J+GG+23:POKE F,124:N
   EXT F
CC 370 ONO=18:X=31:Y=13:GOSUO 500:GOSUB 0
   00:POSITION 33,17:? "<H>";:BILO4(1)=CAR
   O
TT 375 FOA F=J+HH TO J+HH+23:POKE F,240:N
   EXT F
OI 380 POSITION 9,9:? A$:POSITION 12,10
PA 385 FOA F=J+JJ TO J+JJ+23:POKE F,124:N
   EXT F
ZA 390 AETURN
HH 399 REM OECK OSE
JG 400 STAT=0:CNT=0:IF OEK=49 THEN 440
ES 405 IF PEEK(J+JJ)=0 THEN GOSUO 3600
TL 410 IF STAT=1 ANO OEKOWNT=19 THEN GOSO
   B 3620:AETURN
HE 411 IF OEKOWNT=19 THEN STAT=1
KN 412 IF OEKUWNT>52 ANO CNT=0 THEN OEKOW
   NT=19:GOSUB 495:GOTO 410
ZZ 415 IF OEKOWNT>52 THEN 485
EN 420 CARO=OECK(OEKOWNT):IF CARO=0 THEN
   OEKOWNT=OEKOWNT+1:GOTO 410
CN 425 OEKOWNT=OEKOWNT+1:CNT=CNT+1:IF CNT
   =3 THEN 460
NE 430 GOTO 410
JG 440 IF OEKOWNT=52 THEN POSITION 9,9:?
   B$:POSITION 9,18:? "START OVER"
EK 442 IF PEEK(J+JJ)=0 THEN GOSUB 3600
HS 444 IF OEKOWNT=53 THEN GOSUB 1300:GOTO
   45
NA 450 CRAO=OECK(OEKOWNT):OEKOWNT=OEKOWNT
   +1
OK 460 CARO$="   ":GOSUB 550:POSITION 1,1
   4:? "OECK":X=0:Y=15:GOSUB 000
FH 470 POSITION 2,18:? "<J>";:POSITION 9,9
   :? A$
ZQ 480 AETURN
CJ 485 FOA A=52 TO 19 STEP -1
ZQ 487 IF OECK(A)>B THEN CARO=OECK(A):GOT
   O 460
JY 490 NEXT A
HO 495 POSITION 9,9:? B$:POSITION 9,9:? "
   WLRST CARO, STARTING OVER":FOR TO=1 TO
    175:NEXT TO:RETURN
SI 499 REM # TO CARO CONOERSION
EQ 500 CARO=OECK(ONO)
GS 550 ST=INT((CARO-1)/13)+1:CARO$="   "
EB 555 IF CARO=0 THEN CO=0:ST=0:RETURN
MZ 560 ON ST GOTO 570,575,500,585
OT 570 CARO$(3,3)="O":GOTO 700
OJ 575 CARO$(3,3)="B":GUTU 700
LT 580 CARO$(3,3)="*":GOTU 600
XC 585 CARO$(3,3)="*":GOTU 600
```

```
ZE 600 CD=CAAD-((ST-1)*13)
ZT 605 CD=CAAD-((ST-1)*13)
KV 610 IF CO=1 THEN CAAD$(2,2)="A":RETUAN

0T 615 IF CO=10 THEN CAAD$(1,2)="10":RETO
   RN
DK 620 IF CO=11 THEN CAAD$(2,2)="J":RETUA
   N
MU 625 IF CO=12 THEN CARD$(2,2)="Q":RETUR
   N
FP 630 IF CO=13 THEN CAAD$(2,2)="K":RETUR
   N
IO 640 CAAD$(2,2)=STR$(CD)
AG 666 AETURN
ZF 700 CD=CAAD-((ST-1)*13)
CO 710 IF CO=1 THEN CAAD$(2,2)="■":RETURN

ZY 715 IF CO=10 THEN CARD$(1,2)="■■":RETO
   RN
A0 720 IF CO=11 THEN CAAD$(2,2)="■":AETUA
   N
JL 725 IF CO=12 THEN CARD$(2,2)="■":RETUR
   N
CG 730 IF CO=13 THEN CARD$(2,2)="■":RETUR
   N
ZZ 740 CRRO$(2,2)=CHR$(CO+176):RETURN
J0 799 REM ORAW THE CARD
WJ 000 IF ST=1 OR ST=2 THEN 910
LI 010 IF CO=10 THEN 060
WU 020 POSITION X,Y:? " ■■■■■":POSITION X
   ,Y+1:? "■";CARD$(2,3);"  ■"
JJ 030 FOR C=2 TO 5:POSITION X,Y+C:? "■
   ■":NEXT C
OQ 040 POSITION X,Y+6:? "■   ";CRAD$(2,3)
   ;"■":POSITION X,Y+7:? " ■■■■■";:POSITI
   ON 9,9
ZO 050 RETURN
OO 060 POSITION X,Y:? " ■■■■■":POSITION X
   ,Y+1:? "■";CARD$;"  ■"
JR 070 FOR C=2 TO 5:POSITION X,Y+C:? "■
   ■":NEXT C
PO 080 POSITION X,Y+6:? "■   ";CARD$;"■":P
   OSITION X,Y+7:? " ■■■■■";:POSITION 9,9

ZW 090 RETURN
MC 910 IF CO=10 THEN 960
RH 920 POSITION X,Y:? " ■■■■■":POSITION X
   ,Y+1:? "■";CARD$(2,3);"■■■■"
HK 930 FOR C=2 TO 5:POSITION X,Y+C:? "■■■
   ■■■■":NEXT C
IX 940 POSITION X,Y+6:? "■■■■";CRRO$(2,3)
   ;"■":POSITION X,Y+7:? " ■■■■■";:POSITI
   ON 9,9
ZP 950 AETURN
XV 960 POSITION X,Y:? " ■■■■■":POSITION X
   ,Y+1:? "■";CRRO$;"■■■■"
H5 970 FOA C=2 TO 5:POSITION X,Y+C:? "■■■
   ■■■■":NEXT C
XB 980 POSITION X,Y+6:? "■■■■";CARO$;"■":P
   OSITION X,Y+7:? " ■■■■■";:POSITION 9,9

ZX 990 RETUAN
QO 999 REM SCOAE KEEPING
RK 1000 POSITION 0,0:? "TOTAL";:IF SKOR<0
   THEN ? "LOST":GOTO 1020
LP 1010 ? "WON"
5B 1020 ? "$";ABS(SKOR)
AI 1030 RETURN
FT 1300 SOUND 0,120,12,10:FOR TO=1 TO 50:
   NEXT TO:SOUNO 0,0,0,0
LJ 1310 POSITION 9,9:? A$:RETOAN
LC 1320 FOR O=704 TO 707:POKE O,196:NEXT
   O
L5 1322 ? "■";:? :? :? "HRVEN'T QUITE CAO
   GHT ON YET, HRVE WE?":? :? :? "WHY DON
   'T YOO COT YOOR LOSSES,"
HV 1325 ? "RNO REAO THE INSTAOCIDNS AGAI
   N.":? :?
EO 1330 ? "YOOA SCORE SO FAR WAS: $";SKOR

TO 1340 FOR TO=1 TO 1000:NEXT TO:GOTO 760
   0
HL 1499 REM CARO MOVING
WA 1500 POSITION 9,9:? A$:POSITION 9,9:?
   "■■■■■■■■";CHR$(KMOV+120);"■■■■";:GE
   T #1,KMOV2

WW 1510 IF KMOV=KMOV2 THEN POSITION 9,9:?
    A$:AETUAN
0H 1515 IF KMOV2<65 THEN GOSOO 1300:RETOA
   N
AL 1520 IF KMOV2>72 THEN GOSOO 1300:RETOA
   N
ZA 1525 GOSOO (KMOV2-49)*100
CV 1530 GOSOO 550:ST2=ST:CO2=CO:CAAO2$=CA
   RD$:CAAO2=CARO:KOWNT2=N
EZ 1535 GOSOO (KMOV-49)*100:GOSOO 550
XM 1537 IF CO=0 THEN GOTO 1300
IJ 1540 IF KMOV2>60 THEN GOSOW 2600:RETOA
   N
KI 1550 IF KMOV2<69 THEN GOSOO 2000:RETOR
   N
AG 1599 STOP
CW 1600 FOA N=2 TO 13:CARO=HOME1(N)
OO 1610 IF CARO=0 THEN CARO=HOME1(N-1):RE
   TOAN
RR 1620 NEXT N:GOSOO 1300:POSITION 9,9:?
   A$:POP :GOTO 45
DJ 1700 FOR N=1 TO 13:CARO=HOME2(N)
ED 1710 IF CARO=0 THEN CARO=HOME2(N-1):RE
   TURN
KT 1720 NEXT N:GOSOO 1300:POSITION 9,9:?
   A$:POP :GOTO 45
EO 1800 FOR N=1 TO 13:CRRO=HOME3(N)
GA 1810 IF CARO=0 THEN CARO=HOME3(N-1):RE
   TURN
AV 1820 NEXT N:GOSOW 1300:POSITION 9,9:?
   AS:POP :GOTO 45
FT 1900 FOR N=1 TO 13:CARO=HOME4(N)
HG 1910 IF CARO=0 THEN CARO=HOME4(N-1):RE
   TORN
RX 1920 NEXT N:GOSOO 1300:POSITION 9,9:?
   AS:POP :GOTO 45
OP 2000 FOA N=1 TO 26:CARO=0ILO1(N)
OS 2010 IF CAAO=0 THEN CARO=0ILO1(N-1):RE
   TURN
OF 2020 NEXT N:GOTO 1320
KO 2100 FOR N=1 TO 26:CAAO=0ILO2(N)
PY 2110 IF CARO=0 THEN CARO=0ILO2(N-1):RE
   TORN
OH 2120 NEXT N:GOTO 1320
SZ 2200 FOR N=1 TO 26:CARO=0ILO3(N)
RE 2210 IF CARO=0 THEN CRRO=0ILO3(N-1):RE
   TORN
OJ 2220 NEXT N:GOTO 1320
OE 2300 FOA N=1 TO 26:CARO=0ILO4(N)
5K 2310 IF CARO=0 THEN CARO=0ILO4(N-1):RE
   TORN
OL 2320 NEXT N:GOTO 1320
UN 2400 FOR N=1 TO 13:CARO=DECK(N)
MO 2410 IF CARO>0 THEN RETOAN
RO 2420 NEXT N:GOSOO 1300:POSITION 9,9:?
   AS:POP :GOTO 45
OY 2500 CARO=DECK(OEKOWNT-1)
MO 2510 IF CRRO=0 THEN 2530
RO 2520 RETORN
P0 2530 FOR N=OEKOWNT-1 TO 19 STEP -1:IF
   OECK(N)>0 THEN CARO=OECK(N):RETORN
HP 2540 NEXT N
OY 2550 GOTO 1300
ML 2600 IF CARO2=0 THEN 2900
FA 2605 IF ST=ST2 THEN 1300
RY 2610 IF ST1<3 AND ST2>2 THEN 2640
KR 2620 IF ST>2 AND ST2<3 THEN 2640
OO 2630 GOTO 1300
AA 2640 IF CO=13 THEN 2670
GB 2650 IF CO=CO2-1 THEN 2900
PO 2660 GOTO 1300
WT 2670 IF CO2=1 THEN 2900
PJ 2600 GOTO 1300
SE 2000 IF CAAO2=0 THEN 2070
MU 2805 IF ST=ST2 THEN 2020
OS 2810 GOTO 1300
XH 2020 IF CO2=13 THEN 2050
FA 2030 IF CO=CO2+1 THEN 2900
P0 2040 GOTO 1300
BJ 2050 IF CO=1 THEN 2900
PH 2060 GOTO 1300
OT 2070 IF CO=HOME THEN 2900
PN 2000 GOTO 1300
CY 2900 GOSOO (KMOV-39)*100
YC 2910 GOSOO (KMOV-69)*10+3700
OS 2920 GOSOO (KMOV2-25)*100
```

```
BB 2930 RETURN
RP 2999 STOP
HV 3000 TEMP=N-1
CP 3010 IF N>2 THEN 3050
QO 3020 X=10:Y=13:GOSUB KLR:POSITION 12,1
   7:? "<E>"
YH 3030 FOR F=J+EE TO J+EE+31:POKE F,0:NE
   XT F
AN 3040 RETURN
FA 3050 IF N>3 THEN 3070
0C 3055 FOR F=J+EE+24 TO J+EE+31:POKE F,0
   :NEXT F:X=10:Y=15:GOSUB KLR
SE 3060 CARD=BILD1(N-2):GOSUB 550:X=10:Y=
   13:GOSUB 000:POSITION 12,17:? "<E>":RE
   TURN
OY 3070 CARD=BILD1(N-2):GOSUB 550:X=10:Y=
   15:GOSUB 000:POSITION 12,19:? "<E>":PO
   SITION 10,15:? "U"
DK 3075 GOSUB 4000
TK 3080 IF ST>2 AND ODD=0 THEN POSITION 1
   0,15:? "▌▌▌▌▌▌▌▌"
O5 30B2 IF ST>2 AND ODD=1 THEN POSITION 1
   0,15:? "▐▐▐▐▐▐▐▐"
DD 3085 IF ST<3 AND OOD=1 THEN POSITION 1
   0,15:? "▌▌▌▌▌▌▌▌"
UG 3087 IF ST<3 AND OOD=B THEN POSITION 1
   0,15:? "▐▐▐▐▐▐▐▐"
0C 3090 RETURN
HX 3100 TEMP=N-1
DK 311B IF N>2 THEN 3150
OZ 3120 X=17:Y=13:GOSUB KLR:POSITION 19,1
   7:? "<F>"
BF 313B FOR F=J+FF TO J+FF+31:POKE F,0:NE
   XT F
AP 314B RETORN
FV 3150 IF N>3 THEN 3170
R5 3155 FOR F=J+FF+24 TO J+FF+31:POKE F,0
   :NEXT F:X=17:Y=15:GOSUB KLR
OR 3160 CARO=BILD2(N-2):GOSUB 550:X=17:Y=
   13:GOSUB B00:POSITION 19,17:? "<F>":RE
   TURN
D5 3170 CRRD=0ILO2(N-2):GOSUB 550:X=17:Y=
   15:GOSUB BB0:POSITION 19,19:? "<F>":PO
   SITION X,Y:? "U"
DM 3175 GOSUB 4B00
OZ 3180 IF ST>2 AND ODD=0 THEN POSITION 1
   7,15:? "▌▌▌▌▌▌▌▌"
FH 3102 IF ST>2 AND ODD=1 THEN POSITION 1
   7,15:? "▐▐▐▐▐▐▐▐"
DD 3105 IF ST<3 AND OOD=1 THEN POSITION 1
   7,15:? "▌▌▌▌▌▌▌▌"
EO 3107 IF ST<3 AND OOD=0 THEN POSITTON 1
   7,15:? "▐▐▐▐▐▐▐▐"
BE 3190 RETURN
HZ 3200 TEMP=N-1
EF 3210 IF N>2 THEN 3250
CG 3220 X=24:Y=13:GOSUB KLR:POSITIDN 26,1
   7:? "<G>"
ED 3230 FOR F=J+GG TO J+GG+31:POKE F,0:NE
   XT F
AR 3240 RETURN
GQ 3250 IF N>3 THEN 3270
QZ 3255 FOR F=J+GG+24 TO J+GG+31:POKE F,0
   :NEXT F:X=24:Y=15:GOSUB KLR
RN 3260 CRRD=0ILD3(N-2):GOSUB 550:X=24:Y=
   13:GD500 000:PDSITION 26,17:? "<G>":RE
   TURN
ZD 3270 CRRD=0ILD3(N-2):GOSUB 550:X=24:Y=
   15:GOSUB B00:POSITION 26,19:? "<G>":PO
   SITIDN X,Y:? "U"
DD 3275 GOSUB 4B0B
0A 3200 IF ST>2 AND DDD=0 THEN POSITION 2
   4,15:? "▌▌▌▌▌▌▌▌"
CI 3202 IF ST>2 AND DOO=1 THEN POSITION 2
   4,15:? "▐▐▐▐▐▐▐▐"
LE 3205 IF ST<3 AND OOD=1 THEN POSITION 2
   4,15:? "▌▌▌▌▌▌▌▌"
0W 3207 IF ST<3 AND OOO=0 THEN POSITION 2
   4,15:? "▐▐▐▐▐▐▐▐"
BG 3290 RETURN
IB 3300 TEMP=N-1
FA 3310 IF N>2 THEN 335B
AN 3320 X=31:Y=13:GD5UB KLR:POSITIDN 33,1
   7:? "<H>"
HB 3330 FDR F=J+HH TO J+HH+31:PDKE F,0:NE
   XT F
AT 3340 RETURN
HL 3350 IF N>3 THEN 337B
QG 3355 FOR F=J+HH+24 TO J+HH+31:POKE F,0
   :NEXT F:X=31:Y=15:GO5UB KLR
NJ 3360 CARO=BILD4(N-2):GO5UO 550:X=31:Y=
   13:GO5UB 000:PDSITION 33,17:? "<H>":RE
   TURN
OK 3370 CARD=OILD4(N-2):GO5UB 550:X=31:Y=
   15:GO5UB 000:POSITION 33,19:? "<H>":PO
   SITION X,Y:? "U"
DW 3375 GO5UB 400B
YO 3380 IF ST>2 AND ODO=0 THEN POSITION 3
   1,15:? "▌▌▌▌▌▌▌▌"
ZJ 338U IF ST>2 RNO OOD=1 THEN POSITION 3
   1,15:? "▐▐▐▐▐▐▐▐"
IF 3305 IF ST<3 RNO OOD=1 THEN POSITION 3
   1,15:? "▌▌▌▌▌▌▌▌"
YX 3307 IF ST<3 RNO ODO=0 THEN POSITION 3
   1,15:? "▐▐▐▐▐▐▐▐"
DI 3390 RETURN
OW 340B TEMP=N
YN 3410 IF N=13 THEN 345B
GC 3420 CARD=DECK(N+1):GD500 550:X=B:Y=5:
   GD500 000:POSITION 2,9:? "<I>":RETORN
IS 3450 X=0:Y=5:GO500 KLR
LJ 3460 FOR F=J+II TO J+II+23:POKE F,0:NE
   XT F
BE 3470 RETURN
YJ 3500 FOR N=DEKDWN1-1 TO 19 STEP -1:IF
   DECK(N)>0 THEN TEMP=N:GOTO 3520
CO 3505 IF N=19 THEN 355B
TR 351B NEXT N:GOTO 3550
CV 3520 FOR M=N-1 TO 19 STEP -1:IF DECK(M
   )>0 THEN CARO=DECK(M):GOTO 354B
TM 3530 NEXT M:GDTO 3550
5O 3540 GD500 550:X=0:Y=15:GD500 000:PDSI
   TION 2,10:? "<J>":RETORN
MZ 3550 X=0:Y=15:GD50B KLR:POSITION 2,10:
   ? "<J>"
OH 3560 FOR F=J+JJ TO J+JJ+23:POKE F,0:NE
   XT F
OG 3570 RETORN
OG 3600 FOR F=J+JJ TO J+JJ+23:POKE F,124:
   NEXT I:RETORN
GO 3610 FOR F=J+JJ TO J+JJ+23:POKL F,0:NE
   XT F:RETORN
OV 3620 POSITION 9,9:? B$:POSITION 9,9:?
   "HANO EMPTY":GO500 3610:FOR TO-1 TO 15
   0:NEXT TO:RETURN
WJ 3700 CRRO=OILD1(TEMP):GOSUH 550:HTLD1(
   TEMP)=0:RETORN
YM 3710 CARO=OILD2(TEMP):GOSUB 550:HILO2(
   TEMP)=0:RETORN
AP 3720 CARO=OILO3(TEMP):GOSUB 550:HTLO3(
   TEMP)=0:RETORN
C5 3730 CRRO=BILO4(TEMP):GOSUH 550:OILD4(
   TEMP)=0:RETURN
TZ 3740 CARD=DECK(TEMP):GO5OD 550:OECK(TL
   MP)=0:RETURN
NX 3750 CRD=DECK(TEMP):GO500 550:DECK(TE
   MP)=0:IF TEMP=19 THEN GO5UB 3550
0Y 3755 RETURN
AD 4000 X=10:Y=1:GUSUD 00B:POSITION 12,5:
   ? "<A>"
0A 4010 HOME1(KOWNT2)=CARO
OH 4020 CNTCRD=CNTCRO+1:IF CNTCRO=52 THEN
   7700
AD 4040 RETURN
PN 4100 X=17:Y=1:GUSUD 000:POSITION 19,5:
   ? "<B>"
0M 4110 HOME2(KOWNT2)=CARO
OJ 4120 CNTCRD=CNTCRO+1:IF CNTCRO=52 THEN
   7700
TF 4130 IF KOWNT2=1 THEN 4150
AD 4140 RETURN
WI 4150 FOR F=J+BB TO J+BO:23:POKE F,62:N
   EXT F:RETORN
NO 4200 X=24:Y=1:GO500 B0B:POSITION 26,5:
   ? "<C>"
BY 4210 HOME3(KUWNT2)=CARO
DL 422B CNTCRD=CNTCRO+1:IF CNTCRO=52 THEN
   7700
OF 4230 IF KOWNT2=1 THEN 4250
R5 4240 RETURN
0Q 4250 FOR F=J+CC TO J+CC+23:POKE F,124:
   NEXT F:RETORN
```

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MB 4300 X=31:Y=1:GOSUB 800:POSITION 33,5:
   ? "<O>"
CK 4310 HOML4(KOWNT2)=CARD
ON 4320 CNTCRD=CNTCRD+1:IF CNTCRD=52 THEN
   7700
OF 4330 IF KOWNT2=1 THEN 4350
AU 4340 RETURN
OJ 4350 FOR F=J+DO TO J+DD+23:POKE F,248:
   NEXT F:RETURN
XU 4400 BILD1(KOWNT2)=CARD
AK 4405 OOO=1:IF KOWNT2/2-INT(KOWNT2/2)=0
   THEN OOO=0
OZ 4410 IF KOWNT2=1 THEN 4450
U0 4420 X=10:Y=15:GOSUB 800:POSITION 12,1
   9:? "<E>";:POSITION 10,15:? "└"
MO 4425 IF ST2<3 AND OOO=0 OR ST2>2 AND U
   OO=1 THEN POSITION 10,15:? "└▬▬▬▬┘"
RN 4430 FOR F=J+LL+24 TO J+LE+31:POKE F,3
   1:NEXT F
OI 4435 IF ST<3 AND UDU=1 THEN POSITION 1
   0,15:? "└▬▬▬▬┘"
AW 4440 RETURN
WN 4450 X=10:Y=13:GOSUB 800:POSITION 12,1
   7:? "<E>"
ZU 4460 FOR F=J+EE+24 TO J+LE+31:POKE F,0
   :NEXT F
ML 4470 FOR F=J+EE TO J+EE+23:POKE F,31:N
   EXT F
OI 4480 RETURN
YA 4500 D1LD2(KOWNT2)=CARD
AM 4505 OOO=1:IF KOWNT2/2-INT(KOWNT2/2)=0
   THEN OOO=0
WZ 4510 IF KOWNT2=1 THEN 4550
TW 4520 X=17:Y=15:GOSUB 800:POSITION 19,1
   9:? "<F>";:POSITION 17,15:? "└"
CC 4525 IF ST2<3 AND OOO=0 OR ST2>2 AND O
   OO=1 THEN POSITION 17,15:? "└▬▬▬▬┘"
AO 4530 FOR F=J+FF+24 TO J+FF+31:POKE F,6
   2:NEXT F
NX 4535 IF ST<3 AND OOO=1 THEN POSITION 1
   7,15:? "└▬▬▬▬┘"
AY 4540 RETURN
KL 4550 X=17:Y=13:GOSUB 800:POSITION 19,1
   7:? "<F>"
CS 4560 FOR F=J+FF+24 TO J+FF+31:POKE F,0
   :NEXT F
UO 4570 FOR F=J+FF TO J+FF+23:POKE F,62:N
   EXT F
UK 4580 RETURN
YM 4600 BILD3(KOWNT2)=CARD
AU 4605 OOO=1:IF KOWNT2/2-INT(KOWNT2/2)=0
   THEN OOO=0
XZ 4610 IF KOWNT2=1 THEN 4650
NO 4620 X=24:Y=15:GOSUB 800:POSITION 26,1
   9:? "<G>";:POSITION 24,15:? "└"
XP 4625 IF ST2<3 AND OOO=0 OR ST2>2 AND O
   OO=1 THEN POSITION 24,15:? "└▬▬▬▬┘"
OV 4630 FOR F=J+GG+24 TO J+GG+31:POKE F,1
   24:NEXT F
KY 4635 IF ST<3 AND OOO=1 THEN POSITION 2
   4,15:? "└▬▬▬▬┘"
0A 4640 RETURN
I5 4650 X=24:Y=13:GOSUB 800:POSITION 26,1
   7:? "<G>"
FW 4660 FOR F=J+GG+24 TO J+GG+31:POKE F,0
   :NEXT F
FK 4670 FOR F=J+GG TO J+GG+23:POKE F,124:
   NEXT F
UM 4680 RETURN
YY 4700 BILD4(KOWNT2)=CARD
AU 4705 OOO=1:IF KOWNT2/2-INT(KOWNT2/2)=0
   THEN OOO=0
YZ 4710 IF KOWNT2=1 THEN 4750
HG 4720 X=31:Y=15:GOSUB 800:POSITION 33,1
   9:? "<H>";:POSITION 31,15:? "└"
TC 4725 IF ST2<3 AND OOO=0 OR ST2>2 AND U
   OO=1 THEN POSITION 31,15:? "└▬▬▬▬┘"
EP 4730 FOR F=J+HH+24 TO J+HH+31:POKE F,2
   40:NEXT F
HZ 4735 IF ST<3 AND OOO=1 THEN POSITION 3
   1,15:? "└▬▬▬▬┘"
0C 4740 RETURN
GZ 4750 X=31:Y=13:GOSUB 800:POSITION 33,1
   7:? "<H>"
JA 4760 FOR F=J+HH+24 TO J+HH+31:POKE F,0
   :NEXT F
SO 4770 FOR F=J+HH TO J+HH+23:POKE F,248:
   NEXT F
00 4780 RETURN
OK 4000 OOO=1:IF (N-2)/2-INT((N-2)/2)=0 T
   HEN OOO=0
AO 4010 RETURN
CD 5000 POSITION 9,9:? B$:POSITION 9,9:?
   "┌┬┬┬┬┬┬┬┬┐";
PO 5020 CLOSE #1:OPEN #1,4,0,"K:":GET #1,
   KMOD
JL 5030 IF KMOD>72 OR KMOD<69 THEN 1300
KP 5050 ? CHR$(KMOD+120);"■▯▯▯";:GET #1,K
   MOD2:? CHR$(KMOD2+120);" STAND0Y"
RR 5060 IF KMOD=KMOD2 THEN RETURN
K5 5070 IF KMOD2>72 OR KMOD2<69 THEN 1300
ZJ 5080 GOSUB (KMOD2-49)*100
DH 5090 GOSUB 550:ST2=ST:CO2=CO:CARD2$=CA
   A0$:CARD2=CARD:KOWNT2=N
NP 5100 GOSUB (KMOD-69)*10+5200:GOSUB 550
CY 5105 IF DOM=1 THEN RETURN
YM 5110 GOSUB (KMOD2-69)*10+5300
UR 5113 GOSUB (KMOD-69)*100+3020
NT 5116 POSITION X,Y+8:? "          ";POSITI
   ON X,Y+9:? "          ";
ZQ 5120 GOSUB (KMOD2-69)*10+5400
EY 5125 IF N=1 THEN 5150
FY 5140 GOSUB (KMOD2-69)*100+3000
AO 5150 RETURN
RY 5200 CARD=0TILD1(1):GOSUB 550:GOSUB 560
   0:IF OOM=1 THEN RETURN
OS 5206 FOR NM=1 TO 26:MOV(NM)=U1LD1(NM):
   01LD1(NM)=0
NO 5208 NEXT NM:RETURN
SO 5210 CARD=01LD2(1):GOSUB 550:GOSUB 560
   0:IF OOM=1 THEN RETURN
GT 5216 FOR NM=1 TO 26:MOV(NM)=01LD2(NM):
   01LO2(NM)=0
NX 5218 NEXT NM:RETURN
TI 5220 CARD=01LO3(1):GOSUB 550:GOSUB 560
   0:IF DOM=1 THEN RETURN
JO 5226 FUR NM=1 TO 26:MOV(NM)=BILO3(NM):
   01LO3(NM)=0
OA 5228 NEXT NM:RETURN
UA 5230 CARD=01LO4(1):GOSUB 550:GOSUD 560
   0:IF OOM=1 THEN RETURN
MO 5236 FOR NM=1 TO 26:MOV(NM)=BILD4(NM):
   01LD4(NM)=0
OD 5238 NEXT NM:RETURN
AJ 5300 FUR NM=1 TO 26-KOWNT2:BILO1(KOWNT
   2+NM-1)=MOV(NM):NEXT NM:RETURN
OS 5310 FOR NM=1 TO 26-KOWNT2:BILO2(KOWNT
   2+NM-1)=MOV(NM):NEXT NM:RETURN
DU 5320 FOR NM=1 TO 26-KOWNT2:BILO3(KOWNT
   2+NM-1)=MOV(NM):NEXT NM:RETURN
EK 5330 FOR NM=1 TO 26-KOWNT2:BILO4(KOWNT
   2+NM-1)=MOV(NM):NEXT NM:RETURN
AG 5400 FOR NM=26 TO 1 STEP -1:CARD=01LD1
   (NM):IF CARD>0 THEN GOSUB 550:KOWNT2=N
   M:GOTO 4405
OF 5405 NEXT NM:GOTO 1300
FC 5410 FOR NM=26 TO 1 STEP -1:CARD=01LO2
   (NM):IF CARD>0 THEN GOSUB 550:KOWNT2=N
   M:GOTO 4505
OI 5415 NEXT NM:GOTO 1300
JY 5420 FOR NM=26 TO 1 STEP -1:CARD=01LO3
   (NM):IF CARD>0 THEN GOSUB 550:KOWNT2=N
   M:GOTO 4605
UL 5425 NEXT NM:GOTO 1300
OO 5430 FUA NM=26 TO 1 STEP -1:CARD=01LD4
   (NM):IF CARD>0 THEN GOSUB 550:KOWNT2=N
   M:GOTO 4705
UO 5435 NEXT NM:GOTO 1300
OJ 5600 OOM=0:IF CARD2=0 THEN DOM=1:RETOR
   N
WO 5605 IF ST=ST2 THEN GOSUB 1300:OOM=1:R
   ETURN
VK 5610 IF ST<3 AND ST2>2 THEN 5640
VU 5620 IF ST>2 AND ST2<3 THEN 5640
OV 5630 GOSUB 1300:DOM=1:RETURN
CL 5640 IF CO=13 THEN 5670
AN 5650 IF CO=CO2-1 THEN RETURN
VE 5660 GOSUB 1300:DOM=1:RETURN
LU 5670 IF CO2=1 THEN RETURN
VK 5680 GOSUB 1300:DOM=1:RETURN
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```
AY 6000 GNAPHICS 0
OP 6010 ? "                SETTING UP":? " SCN
   EEN WILL GO BLANK FOR 14 SECONDS."
OA 6020 FOR TO=1 TO 175:NEXT TO
YA 6030 AA=200:BB=400:CC=536:DD=24:EE=320
   :FF=456:GG=504:HH=72:II=160:JJ=200
AT 6035 POKE 559,0
RL 6040 POKE 53240,40
PW 6045 POKE 53249,00
AF 6050 POKE 53250,112
WC 6055 POKE 53251,144
OS 6060 FOR D=53256 TO 53259:POKE D,3:NEX
   T D
OM 6065 FOR D=704 TO 707:POKE D,54:NEXT D

OB 6070 POKE 623,1
AW 6075 POKE 53252,200
YU 6080 POKE 53253,192
AY 6085 POKE 53254,104
BD 6090 POKE 53255,176
YP 6095 POKE 53260,255
OJ 6100 I=PELK(106)-8
VL 6105 POKE 54279,1
ED 6110 POKE 53277,3
OX 6115 POKE 53256,3
PN 6120 J=I*256+304
OG 6125 FOR Y=J TO J+639
ZA 6135 POKE Y,0
MC 6140 NEXT Y
OM 6145 POKE 559,46
AV 6150 RETURN
XC 6999 REM SCORING ROUTINE
KK 7000 AESTONE 7500:DEKOUNT=19
GN 7005 FOR D=704 TO 707:POKE D,196:NEXT
   D:? "R"
EA 7010 ? :? "TOTAL AT START: ";:IF SKOR<
   0 THEN ? "LOST ";:GOTO 7016
IO 7013 ? "WON ";
TC 7016 ? "$";R05(SKON)
XO 7020 FOR KT=1 TO 4
HJ 7030 READ ZZ:NERO X:NEAD Y
GI 7040 FOR F=J+ZZ TU J+ZZ+31:POKE F,0:NE
   XT F
IA 7050 NEXT KT
SJ 7055 ? :? :? "CANOS IN FOONDATION: ";C
   NTCAO
JK 7060 ? "FON $";CNTCND*5
EV 7065 SKOA=CNTCND*5+SKOR
P0 7070 ? :? :? "NEW TOTAL: ";
0L 7075 IF SKAA<0 THEN ? "LOST ";:GOTO 70
   05
IM 7080 ? "WON ";
TT 7085 ? "$";A05(SKOA)
YJ 7100 FOA KT=1 TO 6
HI 7120 READ ZZ:NERO X:NEAD Y
IL 7140 FOA F=J+ZZ TO J+ZZ+24:POKE F,0:NE
   XT F
TC 7150 NEXT KT
CF 7200 FOA D=704 TO 707:POKL D,54:NEXT D

GL 7350 ? :? :? "WOOLO YOU LIKE TO"
CO 7360 ? "WTANT A NEW GAME (SAME PARAMET
   ENS)"
GX 7370 ? "WHANGE # OF CANOS OERLT FROM D
   ECK"
PN 7380 ? "WOIT (COT LOSSES/GNAO MONLY &
   AON)"
ZL 7390 ? :? "CHOICE?";
OJ 7400 CLOSE #1:OPEN #1,4,0,"K:":GET #1,
   CHZ:CLOSE #1
AF 7410 IF CHZ=67 THEN 20
ZZ 7420 IF CHZ=83 THEN 30
QC 7430 IF CHZ=01 THEN 7600
ON 7450 ? "[REDACTED]":GOTO 7350
RK 7499 STOP
ZX 7500 DATA 320,10,13,456,17,13,504,24,1
   3,72,31,13
00 7510 DATA 200,0,15,160,0,5
AW 7520 DATR 200,10,1,400,17,1,536,24,1,2
   4,31,1
PM 7600 POKE 623,4
OG 7610 POKE 53277,0
ZC 7620 POKE 559,34
OO 7630 POKE 752,0:POKE 02,2
FX 7640 SETCOLOA 2,9,4:SETCOLON 4,0,0:SET
   COLOA 1,12,10
TN 7650 ? "■":CLN
GG 7690 ENO
RZ 7700 FOA D=704 TO 707:POKE D,196:NEXT
   D:SKOR=SKON+500
IH 7705 ? "%                    [REDACTED]"
OO 7710 ? :? "       I don't believe it."
OE 7715 FON F=J+AA TO J+AA+24:POKE F,0:NE
   XT F
HN 7720 ? :? " Awwwwww, c'monnnnn, yer ki
   llin' me."
TO 7725 FOR F=J+BB TO J+BB+24:POKE F,0:NE
   XT F
00 7730 ? :? "Why don't you get out of he
   re before"
WC 7735 FON F=J+CC TO J+CC+24:POKL F,0:NE
   XT F
AN 7740 ? "          I go bankrupt?"
Z0 7745 FOA F=J+00 TO J+00+24:POKE F,0:NE
   XT F
MI 7750 ? :? "  PLEASE?";:FOA TD=1 TO 70:
   NEXT TO:? " Fine, be that way."
OH 7760 FOA D=704 TO 707:POKE D,54:NEXT D
0M 7770 ? :? "NEW TOTAL: ";
OE 7775 IF SKON<0 THEN ? "LOST ";:GOTO 73
   10
JA 7780 ? "WON ";
GH 7785 ? "$";A05(SKON)
00 7790 GOTO 7350
AL 7000 STOP
WA 12222 FOA I=0 TO 7:POSITION X,Y+I:? "
        ":NEXT I:AETOAN
```

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Recipe Database Ends Kitchen Clipping Clutter

Article on page 88

LISTING 1

Don't type the TYPO II Codes!

```
OL 1 AEM COOKBOOK
00 2 AEM BY ANTHONY WATSON
ZC 3 REM (C)1991, ANTIC PUBLISHING, INC.
JI 10 DIM A$(4000),B$(4000),T$(2221),F$(1
   0)
PM 20 OIM T2$(00),L1$(15),L2$(15)
Z0 30 Z1=30000:Z2=5000:Z3=6000
NU 40 POKE 65,0:POKE 02,2:POKE 106,156
ON 50 L1$="[REDACTED]":L2$="[REDACTED]"
KW 500 TRAP 9000
OW 510 GOSUB 9200
L0 520 TAAP CLEAA
O5 5000 AEM *** [REDACTED] ***
NA 5002 C=5:GOSUB Z3
PH 5005 POKE 752,1
AR 5010 POSITION 11,0:? "[REDACTED]
   [REDACTED]"
KM 5015 POSITION 9,5:? "Press Number to 5
   elect"
XG 5020 POSITION 11,10:? "[REDACTED]"
XZ 5030 POSITION 11,11:? "[REDACTED]
   [REDACTED]"
IC 5040 POSITION 11,12:? "[REDACTED]"
```

```
   ■■■■"
BA 5050 POSITION 11,13:? "■■■S■ ENTER FIL
   E■■■"
AQ 5060 POSITION 11,14:? "■■■■■■■■■■■■■■■■
   ■■■"
PF 5070 GOSUB Z1
OP 5080 IF K=49 THEN 16000
JM 5090 IF K=50 THEN 13100
GP 5100 IF K=51 THEN 20000
SC 5110 GOTO 5070:255
GN 6000 AEM *** COLOR SUBROUTINE ***
BS 6005 GRAPHICS 0
GO 6006 POKE 756,226
MG 6010 POKE 709,15:POKE 712,C*16:POKE 71
   0,0:AETUAN
SY 0000 REM *** TITLE SQUEEZE/CORO ***
GG 0002 POKE 764,255
CV 0005 CLOSE #1:OPEN #1,CMO-3,0,F$
AT 0010 IF CMO=7 THEN B$(1)=" ":B$(4000)=
   " ":!0$(2)=B$:A$=B$:GOSUB 0500
NZ 0030 IF CMO=11 THEN LENGTH=LEN(A$):GOS
   UB 0600
WO 0040 AOOR=AOA(A$):GOSUB 9540
DI 0050 A$=A$(1,LENGTH)
Y5 0060 IF CMO=7 THEN GOSUB 0500
PA 0070 IF CMO=11 THEN LENGTH=LEN(0$):GOS
   UB 0600
XP 0080 AOOR=AOR(B$):GOSUB 9540
AJ 0090 B$=B$(1,LENGTH)
EN 0092 AOOR=39936:LENGTH=1024:GOSUB 9540

OK 0100 CLOSE #1:RETURN
UW 8500 REM *** FOLD SUBROUTINE ***
VQ 8505 GET #1,LO:GET #1,HI
LI 0510 LENGTH=HI*256+LO:RETURN
EF 8600 REM *** FOUR SUBROUTINE ***
GR 8610 HI=INT(LENGTH/256)
EP 0620 LO=LENGTH-HI*256
8Z 8630 PUT #1,LO:PUT #1,HI:RETURN
PF 9000 REM *** CREATE INDEX ***
NA 9005 C=3:GOSUB Z3
AO 9043 ? "PREPETING UP INDEX, PLEASE BA
   TIENA"
OY 9050 T$(1)=" ":T$(2221)=" ":T$(2)=T$
C0 9060 CMO=11:GOSUB 9300
IC 9070 GOTO Z2
OB 9200 REM *** LOAD INDEX ***
OQ 9210 T$(1)=" ":T$(2221)=" ":T$(2)=T$
UT 9220 CMO=7
AV 9300 AOOR=ROR(T$):LENGTH=2221
KY 9310 F$="D:INDEX":GOSUB 9500
OY 9330 CLOSE #1:RETURN
JK 9500 REM *** OPEN ROUTINE ***
CP 9510 CLOSE #1:OPEN #1,CMD-3,0,F$
AX 9540 ROHI=INT(AOOR/256):AOLO=ROOR-AOHI
   *256
VB 9550 LNHI=INT(LENGTH/256):LNLO=LENGTH-
   LNHI*256
O5 9560 POKE 058,CMO:POKE 852,AOLO:POKE 0
   53,AOHI:POKE 856,LNLO:POKE 057,LNHI
WP 9570 X=USR(ROR("hhhLVM"),16)
AZ 9620 RETURN
LZ 10000 REM *** TEXT ENTRY ***
PR 10005 POKE 82,1:?
IN 10010 COL=1:A=1
UJ 10020 GOSUB Z1
OY 10030 IF COL=39 THEN 10208
XO 10040 IF K=27 ANO R=1 THEN RUN
JR 10050 IF K=27 THEN RETURN
GB 10060 IF K=126 THEN 10308
IB 10070 IF K=155 THEN 10408
JI 10080 B$(A)=CHR$(K)
RF 10090 ? B$(A);
WE 10100 A=A+1:COL=COL+1
HA 10110 GOTO 10020
WD 10208 IF K=126 OR K=155 THEN 10040
OW 10220 ? CHR$(253);:GOTO 10020
XN 10308 IF COL=1 THEN 10108
ZA 10320 A=A-1:COL=COL-1
QR 10330 B$(A)=CHR$(K):? B$(A);
XJ 10340 GOTO 10020
QI 10400 B$(A)=CHR$(K):? B$(A);
KE 10420 R=A+1:COL=1
XI 10430 GOTO 10020
VQ 13000 A=1:REM *** ENTER FILENAME ***
TH 13020 IF R>2220 THEN RETURN
OM 13030 IF T$(A,A)<>" " THEN R=A+37:GOTU
   13020
YT 13035 ? "ENTER TITLE"
UA 13040 INPUT T2$
IX 13050 T$(A,A+36)=T2$
EB 13060 AETUAN
XL 13100 AEM *** ENTER FILE ***
CU 13110 C=5:GOSUB Z3
LX 13120 GOSUB 13000
AL 13130 F$="D:FILE"
OK 13140 F$(LEN(F$)+1)=STR$((A-1)/37)
OK 13150 C=5:GOSUB Z3
WV 13160 ? L1$:GOSUB 13500
WW 13170 A$=B$
L5 13100 GAAPHIC5 0:C=7:GOSUB 6010
YM 13105 ? L2$:GOSUB 13500
YK 13190 CMO=11:GOSUB 0000
AI 13200 CMO=11:GOSUB 9300
KS 13210 GOTO Z2
ZH 13500 B$(1)=" ":B$(4000)=" ":0$(2)=B$
KT 13520 GOSUB 10000
EM 13550 AETURN
YQ 14000 AEM *** SCREEN DISPLAY ***
CT 14010 C=5:GOSUB Z3
PL 14030 ? L1$:? :? A$:GOSUB Z1
BF 14050 UN K=27 GUTU Z2
EF 14060 C=7:GOSUB Z3
AO 14070 ? L2$:? :? B$:GOSUB Z1
BV 14090 ON K=27 GOTO Z2
XA 14100 GOTO 14000
HT 15000 AEM *** 2 DIGIT ENTRY ***
PT 15010 GOSUB 15500
WU 15012 IF K=32 THEN AETUAN
YZ 15015 IF K=155 THEN RUN
II 15020 IF K=126 THEN 15010
LQ 15025 ? CHR$(K);:M=K
QB 15030 GOSUB 15500
LK 15035 IF K=126 THEN ? CHR$(K);:GOTO 15
   010
WU 15037 IF K=155 THEN A=M-40:GOTO 15060
ZM 15040 ? CHA$(K);
AN 15050 R=(M-48)*10)+(K-48)
PQ 15060 IF A<1 OA A>60 THEN 15010
EJ 15070 RETUAN
VR 15500 GOSUB Z1
IJ 15512 IF K=32 THEN RETURN
AA 15515 IF K=126 THEN RETURN
8K 15520 ON K=27 GOTO Z2
SU 15525 IF K=155 THEN RETURN
PR 15530 IF K<48 THEN 15500
QQ 15540 IF K>57 THEN 15500
EQ 15550 RETURN
WZ 16000 8=49:REM *** LOAD FILE ***
SK 16010 C=12:GOSUB Z3
TH 16038 ? "ENTER NUMBER OF DESIRED SCREE
   N FROM":POKE 82,3:?
PO 16040 GOSUB 19000
RO 16070 CC=R*37-36
NV 16080 IF T$(CC,CC)=" " THEN GOTO 16010

KN 16890 IF K=32 THEN 16010
RF 16180 F$="D:FILE"
RH 16120 POKE 754,255
ZO 16130 F$(LEN(F$)+1)=STR$(A-1)
OW 16140 CMO=7:GOSUB 8000
HE 16150 TAAP CLERR
FE 16160 C=9:GOSUB Z3
JN 16165 POSITION 11,0:? "THE ANTARTICOCOR
   OCK"
IU 16170 POKE 82,1:POKE 752,5
QR 16180 POSITION 9,9:? "■■■■■■■■■POSITI
   ■■■■■■■"
VJ 16190 POSITION 9,10:? "■■■■■■■■■■■■■■
   ■■■■■■■"
OQ 16200 POSITION 9,11:? "■1 FOR SCREEN D
   ISPLAY■"
YY 16210 POSITION 9,12:? "■2 FOR 40 COL P
   AINTER■"
FO 16220 POSITION 9,13:? "■3 FOR 80 COL P
   RINTER■"
XM 16230 POSITION 9,14:? "■■■■■■■■■■■■■■
   ■■■■■■■"
VJ 16240 GOSU8 Z1
LP 16250 IF K=49 THEN 14000
NO 16260 IF K=50 THEN 16500
KU 16270 IF K=51 THEN 17800
OO 16200 GOTO 16240
EE 16500 REM *** 40 COL PRINT ***
LP 16510 POSITION 18,12:? "2 FOR 40 COL P
   AINTER"
JK 16520 L=40:GOSUB 10000
GT 16530 LPRINT T2$:LPRINT :LPRINT A$:LPR
```

```
   INT :LPRINT B$
OC 16540 GOTO 17500
FZ 17000 REM *** TO COLUMN PRINT ***
RP 17010 POSITION 10,13:? "3 FOR 80 COL P
   RINTER"
KH 17020 L=80:GOSUB 18000
FO 17100 CLOSE #2:OPEN #2,8,0,"P:"
KF 17120 R=1:B=1
TC 17130 COL=1
SK 17140 IF R=LEN(R$) THEN 17200
EJ 17150 IF R$(R,R)=CHR$(155) THEN R=R+1:
   GOTO 17200
MN 17160 PUT #2,ASC(R$(R,R))
XU 17170 R=R+1:COL=COL+1
DM 17180 GOTO 17140
YU 17200 PUT #2,32:COL=COL+1
PR 17210 IF COL<>41 THEN 17200
VC 17300 IF B=LEN(B$) THEN 17400
LP 17310 IF B$(B,B)=CHR$(155) THEN B=B+1:
   GOTO 17400
ON 17320 PUT #2,ASC(B$(B,B))
CR 17330 B=B+1:GOTO 17300
OR 17400 PUT #2,155
YW 17410 IF R=LEN(R$) AND B=LEN(B$) THEN
   17500
CI 17420 GOTO 17130
IC 17500 CLOSE #2:REM *** LINE FEED ***
XH 17510 FOR R=1 TO 5:LPRINT :NEXT R
UZ 17520 GOTO 5000
RZ 18000 REM *** PRINTER SUBROUTINE ***
GN 18010 POSITION 3,20:? "ENTER PRINTER TYS
   PE(EPSON PRESS RETURN)":GOSUB Z1
ZU 18020 IF K=27 THEN RUN
II 18030 POSITION 3,20:? "  TURN PRINTER ON
   & PLEASE STAND BY.  "
WI 18040 T2$=T$(R*37-36,R*37):A=37
PG 18050 IF A=1 THEN 18070
SL 18060 IF T2$(R,R)=" " THEN R=A-1:GOTO
   18050
TO 18070 T2$=T2$(1,R):R=(L-R)/2
JJ 18075 IF L=40 THEN RETURN
EY 18000 CLOSE #1:OPEN #1,8,0,"P:"
QW 18001 ? #1;"%K@%x1%h[%!#%X@P%a1"
UG 18002 ? #1;T2$
EF 18003 ? #1;"%K@%x1%h[%!#%a0"
BY 18110 CLOSE #1:RETURN
CH 19000 B=0+20:IF B=60 THEN B=0
OX 19010 FOR R=1 TO 20
RZ 19020 POSITION 0,R+1:? R+B:POSITION 3,
   R+1
MP 19030 ? T$(R+B)*37-36,(R+B)*37)
CZ 19040 NEXT R
NU 19050 GOSUB 15000
EN 19060 RETURN
FM 20000 B=40:REM *** ALTER FILE ***
RZ 20010 C=12:GOSUB Z3
RS 20020 ? "ENTER RECORD NUMBER OF SCREEN TO
   ALTER":POKE 82,3:?
OZ 20030 GOSUB 19000
GR 20090 IF K=32 THEN 20010
ZU 20100 F$="D:FILE"
QS 20110 POKE 754,255
YZ 20120 F$(LEN(F$)+1)=STH$(R-1)
OH 20130 CMD=7:GOSUB 0000
GP 20140 TRAP CLERR
EP 20150 C=9:GOSUB Z3
IY 20155 POSITION 11,0:? "  ALTER A TEXT FILE(D
   ISK)"
IF 20160 POKE 82,1:POKE 752,5
EA 20170 POSITION 10,9:? "■■■■■■■■■PUSH■■■
   ■■■■"
XY 20180 POSITION 10,10:? "■■■■■■■■■■■■■
   ■■■■■"
JW 20190 POSITION 10,11:? "■■TO■RENUMBER■E
   NTIRE■■■"
PE 20200 POSITION 10,12:? "■2■TO■REPLACE■
   FILE■■■"
OR 20210 POSITION 10,13:? "■3■TO■ERASE■FI
   LE■■■■"
RF 20220 POSITION 10,14:? "■■■■■■■■■■■■■
   ■■■■■"
LJ 20230 GOSUB 30000
MU 20240 IF K=49 THEN 20500
GH 20245 IF K=50 THEN 21000
HU 20246 IF K=51 THEN 22000
ZO 20250 GOTO 20230
XL 20500 REM *** RENUMBER FILE ***
LN 20510 A=R*37-36:? "■■LOAD■TITLE■";T$(R,R
   +36)
FC 20525 T$(R,R+36)="
                    "
RL 20530 GOSUB 13035
QC 20540 CMD=11:GOSUB 9300
HT 20550 RUN
PR 21000 REM *** REPLACE FILE ***
RR 21005 A=A*37-36:T$(R,A+36)="
                              "
XO 21010 GOTO 13100
JC 22000 REM *** ERASE FILE ***
RT 22005 R=R*37-36:T$(R,R+36)="
                              "
RJ 22020 CMD=11:GOSUB 9300
KT 22030 GOTO Z2
QN 30000 REM *** KEYBOARD ***
WU 30010 CLOSE #3:OPEN #3,4,0,"K:"
CZ 30020 GET #3,K:CLOSE #3:RETURN
```

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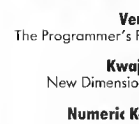

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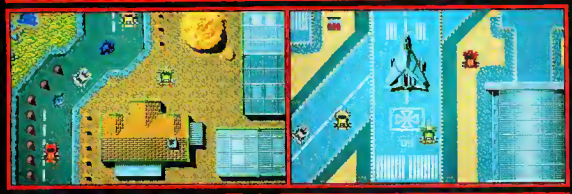

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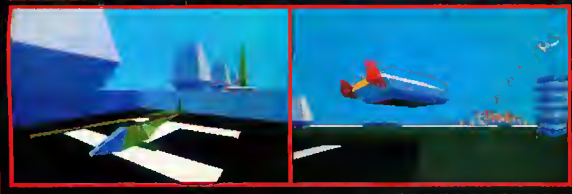

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